### Neural precursor and stem cells

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#### Abstract of EP1529838

A cell population comprising at least 5% neural stem cells, the stem cells being characterized by an expression of ASCT2 or KIAA0152, is new. - Independent claims are also included for the following: - (1) a method for isolating the cell population cited above; - (2) a medicament comprising the above cell population; and - (3) a monoclonal antiboc directed against ASCT2. - ACTIVITY - Neuroprotective; Nootropic; Antiparkinsonian; Cerebroprotective; Vasotropic; No biological data given. - MECHANISM OF ACTION - Cell Therapy.

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Cited documents:

EP1354943 XP00227572 XP00222350

XP00103392 XP00902890



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- (54) Neurale Vorläufer- und Stammzellen
- (57) Zellpopulation, dadurch gekennzeichnet, dass mindestens 5% der Zellen neurale Vorläuferzellen sind, die wenigstens einen der in **Liste A** oder **Liste B** aufgeführten Marker aufweisen.

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#### Beschreibung

[0001] Die vorliegende Erfindung betrifft Zellpopulationen von neuralen Vorläuferzellen bzw. neuralen Stammzellen sowie Verfahren zur Isolierung entsprechender Zellen.

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[0002] Der Ausgangspunkt für die Genenerung der über tausend verschiedenen neuronalen und glialen Zelltypen des Nervensystems von Vertebraten sind multipotente, neurale Stammzellen des embryonalen Neuroepitheliums (Williams, B. P., Read, J. & Price, J. (1991): The generation of neurons and oligodendrocytes from a common precursor cell. Neuron 7(4), 685-93), (Davis, A. A. & Temple, S. (1994): A self-renewing multipotential stem cell in embryonic rat cerebral cortex. Nature 372(6503), 263-6), (Weiss, S., Dunne, C., Hewson, J., Wohl, C., Wheatley, M., Peterson, A. C. & Reynolds, B. A. (1996): Multipotent CNS stem cells are present in the adult mammalian spinal cord and ventricular neuroaxis. J Neurosci 16(23), 7599-609).

[0003] In den vergangenen Jahren wurde durch verschiedene Arbeitsgruppen gezeigt, dass solche sich selbst erneuernden, multipotenten Vorläuferzellen nicht nur während der Entwicklung, sondern auch im adulten Gehirn zu finden sind (Gage, F. H. (2000): Mammalian neural stem cells. *Science* 287(5457), 1433-8). Vor allem um die lateralen Ventrikel des Vorderhirns findet die Bildung von neuralen Vorläuferzellen lebenslang statt. Diese wandern hauptsächlich, wenn auch nicht exklusiv, in den Bulbus olfaktorius, um dort in GABA-erge Interneurone zu differenzieren.

[0004] Über die genaue Lokalisation der multipotenten Stammzellen, die dieser sekundären Neurogenese zugrunde liegen, wird derzeit noch spekuliert: Johansson et al. beschrieben ependymale Zellen entlang des Lumen der adulten, ventrikulären Zone mit den Eigenschaften multipotenter Stammzellen (Johansson, C. B., Svensson, M., Wallstedt, L., Janson, A. M. & Frisen, J. (1999b): Neural stem cells in the adult human brain. Exp Cell Res 253(2), 733-6), während Doetsch et al. Astrocyten der subventrikulären Zone als multipotente Stammzellen identifizierten (Doetsch, F., Caille, I., Lim, D. A., Garcia-Verdugo, J. M. & Alvarez-Buylla, A. (1999): Subventricular zone astrocytes are neural stem cells in the adult mammalian brain. Cell 97(6), 703-16). Eine absolut eindeutige Identifizierung dieser adulten Stammzellen in vivo ist jedoch bis heute, hauptsächlich mangels geeigneter Marker, nicht gelungen.

[0005] Neben ihrer Bedeutung im olfaktorischen System ist das therapeutische Potential der adulten Stammzellen von besonderem Interesse. Aufgrund ihrer Multipotenz weisen neurale Stammzellen bemerkenswerte Formbarkeit auf und könnten daher durch Zusatz von verschiedenen Faktoren zur Erzeugung verschiedener Neuronentypen eingesetzt werden. Die anschließende Transplantation der so entwickelten spezialisierten Zellen könnte zur Behandlung von neurologischen Krankheiten Alzheimer, Parkinson, Folgen von

Schädel-Hirn-Traumata und Schlaganfall beitragen. Voraussetzung dafür ist die Charakterisierung der verschiedenen, neuralen Differenzierungsstufen sowie die Identifizierung der Faktoren, die die Differenzierungsprogramme der Stammzellen steuern. Gegenüber den embryonalen Stammzellen haben die adulten den Vorteil, dass sie erstens keine abstoßende Immunreaktion auslösen würden, weil sie dem Körper des Patienten entstammen, folglich ihre Transplantation ohne Immunsuppression erfolgen könnte, und zweitens ihre Gewinnung ethisch unbedenklich ist.

[0006] Die Erforschung der Eigenschaften neuraler Stammzellen und embronaler Stammzellen des Menschen ist aus ethischen Aspekten praktisch nicht oder nur sehr eingeschränkt möglich. Daher wurden alle explorativen Arbeiten ausgehend von Mäusen und Mauszellen durchgeführt. Wie bereits beschrieben war die Isolierung von neuralen Stammzellen bisher nicht möglich, da dieser Zelltyp nicht eindeutig charakterisiert war und keine geeigneten Marker zur Identifizierung und Anreicherung zur Verfügung standen.

[0007] Aufgabe der vorliegenden Erfindung war es daher Verfahren zu entwickeln, die eine Isolation von neuralen Vorläuferzellen und neuralen Stammzellen erlauben und entsprechende Zellpopulation, enthaltend diese Zelle bereitzustellen.

[0008] Erfindungsgemäß wird die Aufgabe gelöst durch die Identifizierung von Markern, die entsprechende Zellen aufweisen.

[0009] Marker ist ein Gen, das mit Hilfe der Serial Analysis of Genexpression (SAGE) in entsprechenden Zellen gefunden wird.

[0010] Methodisch beruht SAGE auf der Isolierung von 14 bp großen DNA Fragmenten (Tags), die jeweils charakteristisch für eine mRNA-Spezies sind. Die Tags. repräsentativ für alle in der zu untersuchenden Zelle vorliegenden mRNA Moleküle, werden zu langen Polymeren verbunden, die im letzten Schritt der Methode sequenziert werden. Die Frequenz, mit der ein Tag sequenziert wird, ist direkt proportional zur Kopienzahl der mRNA-Moleküle im untersuchten Ausgangsmaterial (Velculescu, V. E., Zhang, L., Vogelstein, B. & Kinzler, K. W. (1995): Serial analysis of gene expression. Science 270(5235), 484-7). Durch die computerunterstützte Auswertung der Sequenzdaten entsteht ein digitales Expressionsprofil, das beliebig oft und ohne zusätzliche Laborarbeit mit Expressionsprofilen anderer Gewebe verglichen werden kann (Meta-Analyse).

[0011] Den so identifizierten Gene sind eindeutigen Nummern zugeordnet, die beispielsweise als SAGEmap von National Center for Biotechnology Information (NCBI) bereitgestellt werden (www.ncbi.nlm.nin.gov/SAGE).

[0012] Gegenstand der Erfindung sind zum einen Zellpopulationen, bei denen mindestens 5% der Zellen neurale Vorläuferzellen sind, die wenigstens einen der in Liste A oder Liste B aufgeführten Marker aufweisen.
[0013] Bevorzugt weisen entsprechende neurale Vor-

läuferzellen wenigstens zwei, drei, vier oder fünf der in Liste A oder B aufgeführten Marker auf.

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[0014] In bevorzugten Ausführungsformen weisen entsprechende neurale Vorläuferzellen keinen der in Liste C aufgeführten Marker auf.

[0015] Bevorzugt ist der Gehaft an neuralen Vorläuferzellen in der Zellpopulation hoch, d.h. mindestens 10%, bevorzugt mindestens 25%, noch mehr bevorzugt mehr als 50% und am meisten bevorzugt über 90%.

[0016] Entsprechende neurale Vorläuferzellen sind vorzugsweise aus Hirngewebe erhältlich.

[0017] In einer Ausführungsform handelt es sich dabei um eine murine Zellpopulation.

[0018] Gegenstand der Erfindung ist auch ein Verfahren zur Isolierung einer entsprechenden Zellpopulation mit folgenden Schritten:

#### entweder

- Entnahme einer Probe aus dem Hirn
- Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker

#### oder

- Differenzierung von embryonalen Stammzellen zu neuralen Vorläuferzellen,
- Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker

#### oder

- Trans-Differenzierung von adulten, nicht neuralen Stammzellen zu neuralen Vorläuferzellen,
- Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker

#### oder

- Differenzierung von adulten, neuralen Stammzellen zu neuralen Vorläuferzellen,
- Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker

#### oder

- Differenzierung von immortalisierten Zellen zu neuralen Vorläuferzellen.
- Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker.

[0019] "Unter Verwendung der angegebenen Marker" bedeutet, dass die Zellen isoliert werden, die positiv für mindestens einen der Marker aus der Liste A und B sind, wobei mehrere positive Marker und die Abwesenheit von Markern der Liste C bevorzugt werden. Die Isolierung kann beispielsweise durch FACS Analyse erfol-

gen. Die durch die Verfahren erhältlichen Zellen sind ebenfalls Gegenstand der Erfindung.

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[0020] Ein weiterer Gegenstand der Erfindung ist die Verwendung mindestens eines Markers ausgewählt aus der Liste A oder Liste B zu identifizierung oder isolierung von neuralen Vorläuferzellen.

[0021] Gegenstand ist weiterhin ein Antikörper gegen einen Marker aus der Liste A, B oder C, ein Diagnostikmittel enthaltend mindestens einen, bevorzugt zwei oder mehr Substanzen zur Erkennung der Marker der Liste A, B oder C sowie ein Arzneimittel enthaltend die erfindungsgemäße Zellpopulation.

[0022] Solche Arzneimittel könnten wie oben dargestellt zur Behandlung von neurologischen Krankheiten wie Alzheimer, Parkinson, Folgen von Schädelhirntraumata oder Schlaganfall eingesetzt werden.

[0023] Ein weiterer Gegenstand ist eine Zellpopulation, bei der mindestens 5% der Zellen neurale Stammzellen sind, die wenigstens einen der in Liste D oder Liste E aufgeführten Marker aufweisen.

[0024] Vorzugsweise weisen entsprechende neurale Stammzellen mindestens zwei, bevorzugt mindestens drei, mindestens vier und noch mehr bevorzugt mindestens fünf der in Liste D oder Liste E aufgeführten Marker auf.

[0025] In besonders bevorzugten Ausführungsformen weisen entsprechende neurale Stammzellen keinen der in Liste A oder Liste C aufgeführten Marker auf. [0026] Der Gehalt an neuralen Stammzellen in der Zellpopulation ist möglichst hoch, bevorzugt mindestes 10%, mehr bevorzugt mindestes 25%, mindestens 50%, und am meisten bevorzugt mindestens 90%.

[0027] Entsprechende Zellpopulation sind aus Hirngewebe erhältlich. In einer Ausführungsform handelt es sich um eine murine Zellpopulation.

[0028] Gegenstand ist weiterhin ein Verfahren zur Isolierung der Zellpopulation. Dies ist erhältlich entweder durch

- Entnahme einer Probe aus dem Hirn
  - Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker

#### 45 oder

- Differenzierung von embryonalen Stammzellen zu neuralen Stammzellen,
- Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker

#### oder

- Trans-Differenzierung von adulten, nicht neuralen Stammzellen zu neuralen Stammzellen,
  - Isolieren der neuralen Stammzellen unter Verwen-

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dung der angegebenen Marker

#### oder

- De-Differenzierung von adulten, neuralen Vorläuferzellen zu neuralen Stammzellen,
- Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker

#### oder

- Differenzierung von immortalisierten Zellen zu neuralen Stammzellen,
- Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker.

[0029] Die Isolierung erfolgt wie oben bei den neuralen Vorläuferzellen angegeben. Auch die auf diesem Wege erhältlichen neuralen Stammzellen sind Gegenstand der Erfindung.

[0030] Gegenstand der Erfindung ist weiterhin ein Antikörper gegen einen Marker aus der Liste D, E, ein Diagnostikmittel enthaltend mindestens einen, bevorzugt zwei oder mehr Substanzen zur Erkennung der Marker der Liste D, E, A oder C sowie ein Arzneimittel enthaltend die erfindungsgemäße Zellpopulation.

[0031] Solche Arzneimitteln können wie dargestellt zur Behandlung von neuronalen Krankheiten wie Alzheimer, Parkinson, Folgen von Schädelhirntraumata oder Schlaganfall eingesetzt werden.

#### Beispiele

#### A. Isolierung von embryonaler Stammzellen

[0032] Murine embryonale Stammzellen proliferieren klonal in vitro und sind aus diesem Grunde in großer Menge und hochreiner Form isolierbar. Nach dem Stand der Technik werden diese in Anwesenheit von LIF auf primären embryonalen Fibroblasten gehalten und regelmäßig durch die Generierung von hochgradig keimbahnkompetenten chimären Mäusen auf ihre Qualität überprüft. Unter normalen Kulturbedingungen beträgt das Verhältnis ES-Zellen zu kontaminierenden Fibroblasten etwa 200:1. Um auch diese minoritäre Komponente zu eliminieren, wurden die ES-Zellen vor der RNA-Päparation für zwei Passagen (vier Tage) auf gelatinisierten Kulturplatten bei erhöhter LIF-Konzentration gehalten. Dies ermöglicht eine Reduktion der kontaminierenden Fibroblasten auf etwa 0,01% der Gesamtpopulation.

B. Isolierung von neuronalen Vorläuferzellen aus dem adulten Mausgehirn.

[0033] In der subventrikulären Zone des adulten Vor-

derhirns von Vertebraten werden permanent große Mengen von neuralen Vorläuferzellen gebildet (wahrscheinlich < 50000 Zellen/ Tag). Diese Zellen benutzen einen präzise definierten Migrationsweg und eine spezielle Form der Translokation (*Chain migration*) um in den Bulbus olfaktorius zu gelangen. Im Bulbus olfaktorius angelangt differenzieren diese Vorläuferzellen normalerweise in inhibitorische (GABA-erge) Interneurone.

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Unter bestimmten experimentellen Bedingungen wurde ihre Differenzierung in Oligodendrozyten und Astrozyten gezeigt.

[0034] Neurale Vorläufer, die einen Differenzierungszustand zwischen einer neuralen Stammzelle und einem terminal differenzierten Neuron repräsentieren, exprimieren spezifisch eine Form des neuralen Zelladhäsionsmoleküls NCAM, die eine spezielle post-translationelle Modifikation aufweist. Diese Modifikation besteht aus der Glykosylierung des Proteins mit a-2,8 verknüpfter Polysialylsäure (PSA). Ein spezifischer Antikörper gegen dieses Glykoepitop (Chazal et al., 2000) erlaubte die hochreine Isolierung der Zielpopulation aus dissozierten Vorderhirngewebe durch FACS (Fluorescence Activated Cell Sorting).

#### <sup>5</sup> C. Molekulargenetische Analyse

[0035] Embryonale Stammzellen und neuronale Vorläuferzellen wurden in einem genomweiten Screen mit der Methode SAGE (Serial Analysis of Gene Expression) analysiert.

[0036] Die Genexpressionsprofile der beiden Zell-Populationen wurden unter Anwendung bioinformatischer Verfahrensweisen mit Maus-Hirn-SAGE-Datenbanken verglichen, um molekulare Marker zu identifizieren, die

35 charakteristisch für embryonale Stammzellen und neuronale Vorläuferzellen sind.

[0037] Mit Hilfe der Microarray technologie wurde die Expression der Gene bestätigt.

[0038] Durch in situ-Hybridisierung in Maushirn und an embryonalen Stammzellen wurde die zelluläre Lokalisation einiger der identifizierten Gene bestimmt. Diese Ergebnisse belegen, dass spezifische Markergene identifiziert werden konnten.

45 Liste A: Positivmarker neurale Vorläuferzellen (1.) und Negativmarker 2 neurale Stammzellen;

ES-Zellen -; PSA-NCAM +; Adult brain -

#### 50 [0039]

	Mm.8884	nuclear factor of kappa light chain gene				
		enhancer in B-cells inhibitor, alpha				
	Mm.8180	lymphocyte antigen 6 complex, locus A				
5	Mm.6238	SRY-box containing gene 11				
	Mm.517	(Manual) Manic fringe protein, putative secreted glycosyltransferase, notch				
		modulator				

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related gene 1   15   (SRp20)	Mm.4919 Mm.4727	DNA segment, human D4S114 seizure related gene 6		Liste B: Posi	tivmarker neurale Vorläuferzellen (2.);
Mm. 42948 Mm. 4022 Mm. 4022 RIKEN cDNA 1110033C18 gene lethal glant larvae homolog ribosomal protein L7 mm. 37436 ribosomal protein h2 mouse ubiquitin-conjugating enzyme E2I myeloid ecotropic viral integration siterelated gene 1 aclin, beta, cytoplasmic expressed sequence Al426163 mm. 2884 ribosomal protein Am. 2884 ribosomal protein Am. 2884 ribosomal protein R0 mm.				ES-Zellen -/+	; PSA-NCAM +; Adult brain -
Mm. 4022 Mm. 3940 Mm. 3940 Mm. 3940 Mm. 3940 Mm. 3940 Mm. 39779 RIKEN cDNA 200006C11 gene			5	[0040]	
Mm. 3940       lethal glant larvae homolog       Mm. 3785       Mm. 3785       high mobility group nucleosomal binding domain 2         Mm. 3740       RIKEN cDNA 2300006C11 gene high mobility group box 3 high mobility group box 1 high mobility group pox 2 high mobility group protein 1 high mobility group box 1 high mobility group pox 1 high mobility group protein 1 high mobility group pox 1 high mobility group protein 1 high mobility group prot		•	,	[0040]	
Mm.37835         ribosomal protein L7         ding domain 2         H3 histone, family 3A           Mm.34079         HIKEN cDNA 2300006C11 gene high mobility group box 3         10         Mm.89136         H3 histone, family 3A           Mm.32902         ESTS, Weakly similar to S26689 hypothelical protein hct - mouse biquith: nocingulgating enzyme E2! myeloid ecotropic viral integration site related gene 1         Mm.7266         C-terminal binding protein 5, epidermal Profilerating cell nuclear antigen Profileration Repair Amage Profileration Repair Amage Profilerating Profileration Repair Amage Profileration Repair Repair Repair Repair Repair Rep				Mm Q11	high mobility group nucleosomal hin-
Mm.3779         RIKEN cDNA 2300006C11 gene high mobility group box 3 high mobility group hox 4 high mobility group box 3 high mobility group hox 1 high mobility group box 1 high mobility group b		•		141111.571	, , , ,
Mm.340         high mobility group box 3         10         Mm.741         fatty acid binding protein 5, epidermal Mm.286           Mm.32902         ESTs, Weakly similar to S26689 hypothetical protein hc1 - mouse ubiquitin-conjugating enzyme £21 myeloid ecotropic viral integration site-related gene 1 acil, beta, cytoplasmic expressed sequence Al426163         Mm.7141 mw.7868         RIKEN cDNA 5730507C05 gene splicing factor, arginine/serine-rich 3 (SRp20)           Mm.297         aciln, beta, cytoplasmic expressed sequence Al426163         Mm.6840         RIKEN cDNA 5730507C05 gene splicing factor, arginine/serine-rich 3 (SRp20)           Mm.29014         T-cell lymphoma invasion and metastasis 2 mkm.2884         Mm.6417         CD24a antigen nucleophosmin 1 nu		•		Mm.89136	
Mm.32902         ESTs, Weakly similar to S26689 hypothetical protein hetical p		9	10		<u>=</u>
Mm.3268         thetical protein hc1 - mouse         Mm.7141         proliferating cell nuclear antigen           Mm.31436         myeloid ecotropic viral integration site-related gene 1         Mm.6840         RIKEN cDNA 5730570505 corporation site-related gene 1         Mm.6840         RIKEN cDNA 573057055 corporation site-related gene 1         Mm.6840         RIKEN cDNA 573057050 corporation site-related gene 1         Mm.68417         CD24a antigen         CSRp20)           Mm.297         actin, beta, cytoplasmic         Mm.6417         CD24a antigen         CD24a antigen         CSRp20)         CD24a antigen         Mm.6417         CD24a antigen         Mm.6483         nucleophosmin 1         Mm.6484         Nm.6484         Nm.6486	Mm.32902				· · · · · · · · · · · · · · · · · ·
Mm. 31436         myeloid ecotropic viral integration site-related gene 1         15         Mm. 6787         splicing factor, arginine/serine-rich 2 (SRp20)           Mm. 297         actin, beta, cytoplasmic         Mm. 6417         CD24a antigen           Mm. 29558         expressed sequence Al426163         Mm. 6343         nucleophosmin 1           Mm. 29014         T-cell lymphoma invasion and metastasis 2         Mm. 43871         expressed sequence AW046487           Mm. 28842         Mus musculus, clone IMAGE:4504748, mRNA         Mm. 43871         expressed sequence AW046487           Mm. 2875         RNA binding molif protein, X chromosome         Mm. 4269         transcription factor 4           Mm. 28149         RIKEN cDNA 3110003A17 gene         Mm. 40715         RIKEN cDNA 1110038H03 gene           Mm. 27816         hexosaminidase B         Mm. 4075         RIKEN cDNA 1110038H03 gene           Mm. 27810         MARCKS-like protein         Mm. 3487         ribosomal protein S26           Mm. 2791         palman         Mm. 4025         nuclear factor I/B           Mm. 29023         RIKEN cDNA 6300406007 gene         Mm. 3467         ribosomal protein S26           Mm. 205936         RIKEN cDNA 2410129E14 gene         Mm. 3011         mm. 2916         RIKEN cDNA 2410129E14 gene           Mm. 19501         gent composite protei		thetical protein hc1 - mouse		Mm.7141	<del>-</del> :
related gene 1   15   (SRp20)	Mm.3268	ubiquitin-conjugating enzyme E2I		Mm.6840	RIKEN cDNA 5730507C05 gene
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Mm.29558         expressed sequence Al426163         Mm.6343         nucleophosmin 1           Mm.29014         T-cell lymphoma invasion and metastasis 2         Mm.482         Jun oncogene           Mm.28842         chloride channel 3         20         Mm.43871         expressed sequence AW046487           Mm.28824         Mus musculus, clone IMAGE:4504748, mRNA         Mm.4269         ribosomal protein S17           Mm.28275         RNA binding motif protein, X chromosome         Mm. 4269         transcription factor 4           Mm.28149         RIKEN cDNA 3110003A17 gene         25         Mm.40715         RIKEN cDNA 1110038H03 gene           Mm.28149         chromobox homolog 3 (Drosophila HP1 gamma)         25         Mm.4071         laminin receptor 1 (67kD, ribosomal protein S4           Mm.27816         hexosaminidase B         Mm.372         ribosomal protein S26           Mm.22769         MARCKS-like protein         Mm.3487         ribosomal protein S26           Mm.21740         heterogeneous nuclear ribonucleoprotein HM         Mm.31051         RiKEN cDNA 2610003J05 gene           Mm.205996         EST AA087124         35         Mm.29911         RiKEN cDNA 3200001M24 gene           Mm.19501         expressed sequence Al84617         Mm.29580         speriorcervical ganglia, neural specific ribosomal protein L35a		related gene 1	15		(SRp20)
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Mm.28842         chloride channel 3         20 Mm.43871         expressed sequence AW046487           Mm.28824         Mus musculus, clone IMAGE:4504748, mRNA         Mm.42767         ribosomal protein S17           Mm.28275         RNA binding motif protein, X chromosome         Mm.4269         transcription factor 4           Mm.28149         RIKEN cDNA 3110003A17 gene         25 Mm.40715         RIKEN cDNA 1110038H03 gene           Mm.28148         chromobox homolog 3 (Drosophila HP1 gamma)         mw.40715         RIKEN cDNA 1110038H03 gene           Mm.27816         hexosaminidase B         Mm.40715         nuclear factor I/B           Mm.27816         hexosaminidase B         Mm.372         ribosomal protein S26           Mm.27916         rexogneous nuclear ribonucleoprotein Mm.3487         ribosomal protein S27           Mm.2082         RIKEN cDNA 6530406007 gene         Mm.31051         RIKEN cDNA 2610003J05 gene           Mm.205996         expressed seque				Mm.6343	nucleophosmin 1
Mm.28842         chloride channel 3         20         Mm.43213         RIKEN cDNA 9030402K04 gene ribosomal protein S17 misosomal protein S28 misosomal protein S28 misosomal protein S26 misosomal protein S28 misosomal protein S27 misosomal protein S28 misosomal protein S27 misosomal protein S28 misosomal protein S29 misosomal protein	Mm.29014			Mm.482	•
Mm. 28824         Mus musculus, clone IMAGE:4504748, mRNA         Mm. 42767 mbosomal protein S17 mm. 4269         ribosomal protein S17 mm. 4269           Mm. 28275         RINA binding motif protein, X chromosome         Mm. 4269         transcription factor 4           Mm. 28149         RIKEN cDNA 3110003A17 gene         25         Mm. 40715         RIKEN cDNA 1110038H03 gene           Mm. 28148         chromobox homolog 3 (Drosophila HP1 gamma)         40         laminin receptor 1 (67kD, ribosomal protein S3)           Mm. 27816         hexosaminidase B         Mm. 4025         nuclear factor I/B           Mm. 2769         MARCKS-like protein         Mm. 3487         ribosomal protein S26           Mm. 22171         calponin 3, acidic         30         Mm. 3887         ribosomal protein S27-like           Mm. 220923         RIKEN cDNA 6530406007 gene         Mm. 31051         RIKEN cDNA 2610003J05 gene           Mm. 21740         heterogeneous nuclear ribonucleoprotein Mm. 30120         ribosomal protein S27-like           Mm. 206085         expressed sequence Al854782         Mm. 29911         RIKEN cDNA 2200001M24 gene           Mm. 199500         expressed sequence Al844617         Mm. 29580         superiorcervical ganglia, neural specific           Mm. 199501         ribosomal protein L35a         Mm. 29580         superiorcervical ganglia, neural specific					
mRNA  Mm.28275  RNA binding motif protein, X chromosome me  Mm.28149  RIKEN cDNA 3110003A17 gene 25  Mm.40715  RIKEN cDNA 111003BH03 gene Mm.28148  chromobox homolog 3 (Drosophila HP1 gamma)  Mm.27816  Mm.27816  Mm.2769  Mm.2769  Mm.2769  Mm.2769  Mm.2023  RIKEN cDNA 6530406007 gene Mm.201740  heterogeneous nuclear ribonucleoprotein HI tein H1  Mm.208085  RIKEN cDNA 6530406007 gene Mm.205996  EST AA087124  Mm.20858  RIKEN cDNA 2410129E14 gene expressed sequence Al844617  Mm.199500  Mm.199500  Mm.199500  Mm.199501  Mm.199501  DEAD (aspartate-glutamate-alanine-aspartate) box polypeptide 5  Mm.19016  drebrin 1  Mm.186740  ESTs  Mm.19016  Mm.186740  ESTs  Mm.19016  Mm.181859  Mm.181859  Mm.181859  Mm.181859  Mm.181857  Mm.181859  Mm.181857  Mm.181857  Mm.181857  Mm.181857  Mm.19018  Mm.190403  Mm.29580  Mm.29580  Mm.27141  Mm.27141  Mm.27141  Mm.2756.  Mm.29510  Mm.29511  RIKEN cDNA 1110038H03 gene  Mm.40715  RIKEN cDNA 1110038H03 gene  Mm.4075  Mm.40751  Mm.4075  RIKEN cDNA 1110038H03 gene  Mm.4075  Mm.4025  Mm.4075  Mm.4075  Mm.4075  Mm.4075  Mm.4075  Mm.4075  Mm.4025  Mm.4075  RikEn cDNA 1110038H03 gene  Mm.4075  Mm.4070  Mm.4070  Mm.4070  Mm.4070  Mm.40			20		o de la companya de l
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Mm.19500 expressed sequence Al844617	Mm.205996	EST AA087124	35	Mm.2966	isocitrate dehydrogenase 2 (NADP+),
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		•	50		•
Mm.12871 doublecortin IMAGE:4016437, mRNA, complete cds		·			IMAGE:4016437, mRNA, complete cds
Mm.127662 ESTs Mm.219668 RIKEN cDNA 2610209F03 gene	Mm.127662	ESTs		Mm.219668	
Mm.12412 Mus musculus, Similar to RIKEN cDNA Mm.21841 splicing factor, arginine/serine-rich 2 2810407E23 gene, clone IMAGE: (SC-35)	Mm.12412			Mm.21841	splicing factor, arginine/serine-rich 2 (SC-35)
			55	Mm.218240	Mus musculus, clone IMAGE:5342828,
Mm.21740 heterogeneous nuclear ribonucleoprotein H1				Mm.21740	heterogeneous nuclear ribonucleopro-

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Mm.213020	( p		Mm.6660	small inducible cytokine A27
M 0445	(RPL32)		Mm.6586	Mus musculus, clone MGC:6299 IMAGE:
Mm.2115	heterogeneous nuclear ribonucleopro-			2654341, mRNA, complete cds
Mm.196611	tein U	_	Mm.6565	FK506 binding protein 8 (38 kDa)
Mm.19187	synapsin I	5	Mm.65337	Mus musculus, clone MGC:28924
Mm.18789	prothymosin alpha SRY-box containing gene 4		Mm 640	IMAGE:3481738, mRNA, complete cds
Mm.186499			Mm.648 Mm.638	prion protein ESTs
WIIII. 160433	superfamily containing leucinerich re-		Mm.544	
	peat peat	10	Mm.5264	phosphoprotein enriched in astrocytes 15 ESTs, Highly similar to FEZ1_RAT FA-
Mm.18516	H3 histone, family 3B		141111.5204	SCICULATION AND ELONGATION
Mm.180873	•			PROTEIN ZETA 1 (ZYGIN I)
Mm.1775	hematological and neurological expres-		Mm.5259	(Manual assignment) probably myelin-
	sed sequence 1			associated oligodendrocyte basic protein
Mm.1703	tubulin, beta 5	15		MOBP
Mm.16775	ribosomal protein S24		Mm.5249	copine 6
Mm.16767	heterogeneous nuclear ribonucleopro-		Mm.52	RIKEN cDNA 1810033A19 gene
	tein A2/B1		Mm.5195	complexin 1
Mm.16596	B-cell translocation gene 1, anti-prolife-		Mm.5153	neurotensin receptor 2
	rative	20	Mm.5023	Purkinje cell protein 4
Mm.148973	RIKEN cDNA 3010025E17 gene		Mm.4923	ESTs
Mm.142872	heterogeneous nuclear ribonucleopro-		Mm.4921	glutamate receptor, ionotropic, AMPA2
	tein K			(alpha 2)
Mm.142729	thymosin, beta 4, X chromosome		Mm.4920	glutamate receptor, ionotropic, AMPA1
Mm.140380	ribosomal protein L23	25		(alpha 1)
Mm.140	protein phosphatase 1, regulatory (inhi-		Mm.4870	synaptosomal-associated protein, 91
Mm. 12858	bitor) subunit 14B		N 4057	kDa
WIIII. 12000	eukaryotic translation initiation factor 4A1		Mm.4857	calcium/calmodulin-dependent protein
	701	30	Mm.4762	kinase II, beta kinesin heavy chain member 1A
Liste C: Nec	gativmarker 1 neurale Stammzellen und	-	Mm.4702	(Manual) probably in far 3'-UTR of com-
	ker neurale Vorläuferzellen;		14111.4705	plexin-2 cDNA
<b>J</b>	•		Mm.46764	RIKEN cDNA 4833409J18 gene
ES-Zellen -;	PSA-NCAM -; Adult brain +		Mm.4657	amyloid beta (A4) precursor protein-bin-
	·	35		ding, family A, member 2
[0041]			Mm.4651	kinesin-associated protein 3
			Mm.45951	RIKEN cDNA 1200016B17 gene
Mm.98	proteasome (prosome, macropain) subu-		Mm.4550	ATPase, Na+/K+ transporting, beta 1 po-
	nit, beta type 6			lypeptide
Mm.9745	lactate dehydrogenase 2, B chain	40	Mm.4550	ATPase, Na+/K+ transporting, beta 1 po-
Mm.970	creatine kinase, mitochondrial 1, ubiqui-			lypeptide
N	tous		Mm.4537	NADH dehydrogenase (ubiquinone) 1
Mm.891	kinesin family member C2			beta subcomplex, 9
Mm.88833	Mus musculus strain ILS K-Cl cotrans-	45	Mm.44355	RIKEN cDNA 6430514L14 gene
Mm.87027	porter (Slc12a5) mRNA, complete cds BM88 antigen	43	Mm.4435	synaptosomal-associated protein, 25
Mm.8688	RIKEN cDNA 0610011B04 gene		Mm.44244	kDa open reading frame 12
Mm.86654	microtubule-associated protein 6		Mm.44107	ESTs
Mm.848	testis expressed gene 261		Mm.44101	Mus musculus, ATPase, Na+K+ trans-
Mm.806	CD 81 antigen	50	101111.44101	porting, alpha 3 subunit, clone MGC:
Mm.80123	ESTs, Weakly similar to simple repeat se-			27631 IMAGE:4506376, mRNA, comple-
				te cds
	quence-containing transcript			
Mm.7729	aldolase 3, C isoform		Mm.4383	myc box dependent interacting protein 1
Mm.7729 Mm.7420			Mm.4383 Mm.43786	myc box dependent interacting protein 1 cytochrome c oxidase, subunit VIIc
	aldolase 3, C isoform	55		
Mm.7420	aldolase 3, C isoform tubulin, beta 4	55	Mm.43786	cytochrome c oxidase, subunit VIIc
Mm.7420 Mm.7363	aldolase 3, C isoform tubulin, beta 4 beta-spectrin 3	55	Mm.43786 Mm.43749	cytochrome c oxidase, subunit VIIc RIKEN cDNA 3100001N19 gene

	lypeptide 1		Mm.3974	ubiquitin specific protease 4 (proto-onco-
Mm.4339	laminin, alpha 5			gene)
Mm.43330	RIKEN cDNA 0610025G13 gene		Mm.39548	expressed sequence Al839779
Mm.43278	olfactomedin 1		Mm.3951	thymus cell antigen 1, theta
Mm.43278	olfactomedin 1	5	Mm.3915	myelin-associated oligodendrocytic ba-
Mm.4296	synovial sarcoma translocation, Chromo-			sic protein
	some 18		Mm.39040	myelin and lymphocyte protein, T-cell dif-
Mm.42949	RIKEN cDNA 1110012005 gene			ferentiation protein
Mm.42948	peroxiredoxin 2		Mm.38994	RIKEN cDNA 2600001N01 gene
Mm.42829	selenoprotein W, muscle 1	10	Mm.38993	calsyntenin 1
Mm.4266	integral membrane protein 2B		Mm.38551	calcium binding protein 1
Mm.4266	integral membrane protein 2B		Mm.38469	amyloid beta (A4) precursor protein-bin-
Mm.4263	cystatin C			ding, family B, member 1
Mm.425	histidine triad nucleotide binding protein		Mm.38438	RIKEN cDNA 1200009K17 gene
Mm.42255	ATPase, Ca++ transporting, cardiac	15	Mm.38421	(Manual assignment) ATPase, Na+K+
	muscle, slow twitch 2			transporting, alpha polypeptide
Mm.41926	NADH dehydrogenase (ubiquinone) 1 al-		Mm.38421	(Manual assignment) ATPase, Na+K+
	pha subcomplex, 4			transporting, alpha polypeptide
Mm.41925	RIKEN cDNA 1810034B16 gene		Mm.3840	flotillin 2
Mm.41918	RIKEN cDNA 1110063G11 gene	20	Mm.38248	sialyltransferase 9 (CMP-NeuAc:lacto-
Mm.41911	cytochrome P450, 46 (cholesterol 24-hy-			sylceramide alpha-2,3-sialyltransferase)
	droxylase)		Mm.38036	ESTs, Moderately similar to
Mm.41893	RIKEN cDNA 6330408G06 gene			NX1A_MOUSE_2
Mm.41791	glycoprotein m6b		Mm.38036	ESTs, Moderately similar to
Mm.41752	expressed sequence Al847934	25		NX1A_MOUSE_2
Mm.41735	RIKEN cDNA 2300004C15 gene		Mm.37462	ESTs, Weakly similar to CA11 RAT COL-
Mm.41719	RIKEN cDNA 2610507A21 gene			LAGEN ALPHA 1(I) CHAIN
Mm.41711	Mus musculus, clone IMAGE:3499845,		Mm.37214	transferrin
	mRNA, partial cds		Mm.36275	DNA segment, Chr 11, Brigham & Wo-
Mm.41694	ESTs	30		men's Genetics 0517 expressed
Mm.41692	ESTs, Weakly similar to F59F4.2.p		Mm.3624	guanylate kinase 1
Mm.41642	regulator of G-protein signaling 4		Mm.35837	RIKEN cDNA 2510006D16 gene
Mm.41630	RIKEN cDNA 0710001E10 gene		Mm.35837	RIKEN cDNA 2510006D16 gene
Mm.41604	ESTs, Weakly similar to VAV3_MOUSE		Mm.3544	calcium channel, voltage-dependent, be-
	VAV-3 PROTEIN	35		ta 3 subunit
Mm.41603	expressed sequence Al891706		Mm.35439	secreted acidic cysteine rich glycoprotein
Mm.41603	expressed sequence Al891706		Mm.35270	Ly6/neurotoxin 1
Mm.41602	RIKEN cDNA 3110050007 gene		Mm.3479	ATPase, H+ transporting, lysosomal
Mm.41602	RIKEN cDNA 3110050007 gene			21kDa, V0 subunit B
Mm.4137	chromogranin A	40	Mm.34695	actin related protein 2/3 complex, subunit
Mm.41354	ESTs			1A (41 kDa)
Mm.41277	RIKEN cDNA 1110020M21 gene		Mm.34246	calmodulin 1
Mm.41248	ESTs		Mm.3363	prosaposin
Mm.41190	RIKEN cDNA 1700112L09 gene		Mm.3360	tyrosine 3-monooxygenase/tryptophan
Mm.40863	expressed sequence AW049870	45		5-monooxygenase activation protein, ze-
Mm.40738	RIKEN cDNA 2900072M03 gene			ta polypeptide
Mm.40621	ESTs, Moderately similar to		Mm.33117	ESTs
	Y552_HUMAN HYPOTHETICAL PRO-		Mm.3308	tyrosine 3-monooxygenase/tryptophan
	TEIN KIAA0552			5-monooxygenase activation protein, eta
Mm.40472	expressed sequence Al835002	50		polypeptide
Mm.40443	RIKEN cDNA 4930488B01 gene		Mm.3292	glutamate receptor, ionotropic, NMDA1
Mm.40124	phosphodiesterase 10A			(zeta 1)
Mm.40059	ESTs, Weakly similar to SP62 MOUSE		Mm.3229	ribosomal protein L26
	SPLICEOSOME ASSOCIATED PROTE-		Mm.32191	gamma-aminobutyric acid (GABA-B) re-
	IN 62	55		ceptor, 1
Mm.39857	RIKEN cDNA 2900074L19 gene		Mm.31395	carboxypeptidase E
Mm.39803	expressed sequence Al841080		Mm.3123	comichon-like (Drosophila)
Mm.39752	RIKEN cDNA 2900041A09 gene		Mm.31025	RIKEN cDNA 2310015K15 gene

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Mm.30412 Mm.30355	RIKEN cDNA 5430400P17 gene (Manual) KIF5A Neuronal Kinesin heavy chain		Mm.29230 Mm.29227 Mm.29205	RIKEN cDNA 1500017E18 gene RIKEN cDNA 2300002D11 gene bruno-like 4, RNA binding protein (Droso-
Mm.30266	hemoglobin, beta adult major chain		Wiff1.29205	phila)
Mm.30266	hemoglobin, beta adult major chain	5	Mm.29205	bruno-like 4, RNA binding protein (Droso-
Mm.30206	ATPase, H+ transporting, lysosomal	-	WIII1.23200	phila)
	34kD, V1 subunit D		Mm.2918	megakaryocyte-associated tyrosine ki-
Mm.30156	protease, serine, 11 (Igf binding)			nase
Mm.30155	ATPase, H+ transporting, lysosomal		Mm.29141	RIKEN cDNA 0710008N11 gene
	16kD, V0 subunit C	10	Mm.29124	phosphatidic acid phosphatase type 2B
Mm.30150	RIKEN cDNA 1010001M12 gene		Mm.29075	(Manual) Reticulon 1 protein, major inter-
Mm.30126	membrane interacting protein of RGS16			nal tag
Mm.30085	aldo-keto reductase family 1, member A4		Mm.29027	SPARC-like 1 (mast9, hevin)
	(aldehyde reductase)		Mm.29027	SPARC-like 1 (mast9, hevin)
Mm.30072	cytochrome c oxidase subunit VIIa poly-	15	Mm.2902	protein tyrosine phosphatase, receptor-
	peptide 2-like			type, N
Mm.30059	myristoylated alanine rich protein kinase		Mm.28955	RIKEN cDNA 4930570C03 gene
	C substrate		Mm.28650	RAB6, member RAS oncogene family
Mm.29976	septin 5		Mm.28650	RAB6, member RAS oncogene family
Mm.29965	RIKEN cDNA 2410104119 gene	20		vesicle-associated membrane protein 2
Mm.29947	serine/threonine kinase 11		Mm.28561	protein kinase C, zeta
Mm.29939	RIKEN cDNA 1010001N11 gene		Mm.28518	type I transmembrane protein Fn14
Mm.29937	(Manual assignment) polymorphism of Mm.29937 ESTs, Weakly similar to pre-		Mm.28357	microtubule-associated protein 1 light chain 3
	dicted using Genefinder	25	Mm.2815	RIKEN cDNA 1110021H02 gene
Mm.29921	RAS protein-specific guanine nucleotide- releasing factor 1		Mm.28107	ectonucleotide pyrophosphatase/phos- phodiesterase 2
Mm.2992	(Manual assignment) MBP myelin basic		Mm.28058	NADH dehydrogenase (ubiquinone) 1
	protein			beta subcomplex 5
Mm.29870	integral membrane protein 3	30	Mm.27886	RIKEN cDNA 2410011G03 gene
Mm.29867	NADH dehydrogenase (ubiquinone) 1 al-			
14 00057	pha subcomplex 2		Mm.27608	Mus musculus, Similar to chromosome
Mm.29857	(Manual) Neurogranin			9 open reading frame 16, clone MGC:
Mm.29852	Mus musculus, clone IMAGE:5102170,	05		19388 IMAGE:2812475, mRNA, com-
Mm.29846	mRNA, partial cds	35	Nam 0755	plete cds
141111.25040	Mus musculus, Similar to NDRG family, member 4, clone MGC:7067 IMAGE:		Mm.2755 Mm.27499	calbindin 2
	3156802, mRNA, complete cds		Mm.27499	RIKEN cDNA 2010004E11 gene RecQ protein-like
Mm.29842	NADH dehydrogenase flavoprotein 1		Mm.27256	discs, large homolog 4 (Drosophila)
Mm.29823	microsomal glutathione S-transferase 3	40	Mm.2720	mitogen activated protein kinase 8 in-
Mm.29807	ubiquitin carboxy-terminal hydrolase L1		141111.2720	teracting protein
Mm.29807	ubiquitin carboxy-terminal hydrolase L1		Mm.27114	RIKEN cDNA 0610043B10 gene
Mm.29771	ATPase, H+ transporting, lysosomal		Mm.27087	RIKEN cDNA 2010012C24 gene
	70kD, V1 subunit A, isoform 1		Mm.27005	visinin-like 1
Mm.29717	3-monooxgenase/tryptophan 5-monoox-	45	Mm.26633	PH domain containing protein in retina 1
	genase activation protein, gamma poly-		Mm.26633	PH domain containing protein in retina 1
	peptide		Mm.26550	phosphofructokinase, muscle
Mm.29711	adrenergic receptor kinase, beta 1		Mm.2645	eukaryotic translation elongation factor
Mm.297	actin, beta, cytoplasmic			1 alpha 2
Mm.29633	RIKEN cDNA 1810008021 gene	50	Mm.2635	pyruvate kinase 3
Mm.29600	Mus musculus, clone IMAGE:3964267,		Mm.2619	cholecystokinin
	mRNA		Mm.25849	RIKEN cDNA 2010003014 gene
Mm.2948	H2-K region expressed gene 2		Mm.25738	RIKEN cDNA 2900002P20 gene
Mm.29477	SCAN domain-containing 1		Mm.25228	ring finger protein 11
Mm.29415	RIKEN cDNA 1810011001 gene	55	Mm.25203	NCK-associated protein 1
Mm.29362	expressed sequence Al414999		Mm.2496	internexin neuronal intermediate fila-
Mm.29344	tumor differentially expressed 1, like		N- 04400	ment protein, alpha
Mm.29330	expressed sequence Al853543		Mm.24482	RIKEN cDNA 5730460C18 gene

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Mm.2446	synaptotagmin 4			pha o
Mm.24376	Mus musculus mRNA for calsyntenin-3		Mm.20964	guanine nucleotide binding protein, al-
14 0444	(Cs3 gene)			pha o
Mm.2411	Ras-GTPase-activating protein (GAP	_	Mm.2082	apolipoprotein D
Mm.24092	<120>) SH3-domain binding protein 2	5	Mm.206218	Mus musculus, Similar to hypothetical
WIII1.24092	N-ethylmaleimide sensitive fusion pro- tein			protein FLJ22237, clone MGC:27683 IMAGE:4913322, mRNA, complete cds
Mm.24092	N-ethylmaleimide sensitive fusion pro-		Mm.2060	RIKEN cDNA 2900010105 gene
	tein		Mm.20472	vertebrate homolog of C. elegans Lin-7
Mm.2400	glutathione peroxidase 4	10		type 2
Mm.2397	synaptophysin		Mm.203939	expressed sequence Al256814
Mm.23826	phosphotyrosyl phosphatase activator		Mm.203924	expressed sequence AW259572
Mm.2381	amyloid beta (A4) precursor-like protein		Mm.203921	expressed sequence Al850305
M 0000		45	Mm.202728	expressed sequence Al447901
Mm.2338	glutamine synthetase	15	Mm.202696	expressed sequence AA409221
Mm.2338	glutamine synthetase		Mm.201729	expressed sequence Al426007
Mm.2326	macrophage migration inhibitory factor		Mm.2011	glutathione S-transferase, mu 1
Mm.2319 Mm.23023	Scgn10 like-protein RIKEN cDNA 1500009C09 gene		Mm.200858 Mm.200843	RIKEN cDNA 2410129E14 gene
Mm.23023	RIKEN cDNA 5330410G16 gene	20	Mm.200817	synuclein, beta expressed sequence AW124717
Mm.22699	selenoprotein P, plasma, 1	20	Mm.200817	expressed sequence AW124717 expressed sequence AW124717
Mm.22637	RIKEN cDNA 0910001L24 gene		Mm.200806	(Manual) no clear assignment, probably
Mm.22597	RIKEN cDNA 2310042E05 gene		14111.200000	non-coding (but spliced) RNA gene
Mm.22473	Rab acceptor 1 (prenylated)		Mm.200511	expressed sequence Al115024
Mm.22149	succinate dehydrogenase complex,	25	Mm.199903	expressed sequence Al850290
	subunit A, flavoprotein (Fp)		Mm.199652	expressed sequence Al838505
Mm.2214	septin 4		Mm.198588	expressed sequence Al851970
Mm.220966	reticulon 4		Mm.19834	RIKEN cDNA 0610033L03 gene
Mm.220898	calmodulin 3		Mm.197523	brain acyl-CoA hydrolase
Mm.220885	neurochondrin	30	Mm.196614	eukaryotic translation elongation factor
Mm.2206	NADH dehydrogenase (ubiquinone) fla-			1 alpha 1
	voprotein 2		Mm.196611	synapsin I
Mm.219776	RIKEN cDNA 1110001E17 gene		Mm.196607	eukaryotic translation initiation factor 5A
Mm.218848	RIKEN cDNA 3010002G01 gene		Mm.196605	hexokinase 1
Mm.218764	guanine nucleotide binding protein 13,	35	Mm.196578	mitochondrial carrier homolog 1
	gamma		Mm.196344	lusterin
Mm.218611	receptor (calcitonin) activity modifying		Mm.196239	RIKEN cDNA 4922501H04 gene
	protein 2		Mm.195869	ATPase, H+ transporting, lysosomal
Mm.21743	malate dehydrogenase, mitochondrial			31kDa, V1 subunit E
Mm.216438	Mus musculus, clone IMAGE:5068657,	40	Mm.1956	neurofilament, light polypeptide
	mRNA, partial cds		Mm.19370	ATP synthase, H+ transporting, mi-
Mm.216240	Mus musculus, clone IMAGE:3594799,			tochondrial F1F0 complex, subunit e
14 04 405	mRNA		Mm.193539	H1 histone family, member 2
Mm.21485	RIKEN cDNA 2610102M01 gene	15	Mm.192991	Mus musculus, Similar to metallot-
Mm.214549	Mus musculus, Similar to vesicle-associated calmodulin-binding protein, clone	45		hionein 1, clone MGC:27821 IMAGE:
	<b>.</b>	٠	Mm 10122	3483861, mRNA, complete cds
	MGC:28873 IMAGE:4527857, mRNA, complete cds		Mm.19133	amyloid beta (A4) precursor-like protein 2
Mm.2133	centaurin, gamma 3		Mm.19047	expressed sequence Al425998
Mm.212672	S100 protein, beta polypeptide, neural	50	Mm.182912	growth hormone inducible transmem-
Mm.212516	RIKEN cDNA 2900002L20 gene		141111.102312	brane protein
Mm.21251	deleted in polyposis 1		Mm.18218	ganglioside-induced differentiation-as-
Mm.21162	genes associated with retinoid-IFN-in-			sociated-protein 1
	duced mortality 19		Mm.181894	RIKEN cDNA 2900092E17 gene
Mm.2108	transthyretin	55	Mm.181721	RIKEN cDNA 2610041P16 gene
Mm.21071	ADP-ribosylation-like 2		Mm.180182	cytochrome c oxidase, subunit Vb
Mm.21069	RIKEN cDNA 0610007A03 gene		Mm.1776	ferritin heavy chain
Mm.20964	guanine nucleotide binding protein, al-		Mm.177272	brain protein 17

gnal protein 2

17	FP 1	529	838 A	1
.,	_, ,	JES	000 A	•

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Mm,177117	Mus musculus, clone MGC:31632		Mm.115124	brain protein 14
	IMAGE:4511454, mRNA, complete cds		Mm.114810	expressed sequence AW060990
Mm.176927	RIKEN cDNA 2610301115 gene		Mm.1147	Mus musculus calmodulin III (Calm3)
Mm.17484	synuclein, alpha			mRNA, 3' untranslated region
Mm.16831	creatine kinase, brain	5	Mm.10727	ATPase, H+ transporting, lysosomal
Mm.16769	RIKEN cDNA 5031406P05 gene			56/58kD, V1 subunit B, isoform 2
Mm.16767	heterogeneous nuclear ribonucleopro-		Mm.103709	potassium inwardly-rectifying channel,
	tein A2/B1		MIII. 100703	
Mm.16763	aldolase 1, A isoform		M 10000E	subfamily J, member 10
Mm.16228		40	Mm.103605	DnaJ (Hsp40) homolog, subfamily B,
WIIII. 10226	solute carrier family 25 (mitochondrial	10		member 10
	carrier; adenine nucleotide transloca-		Mm.102278	secretory carrier membrane protein 5
	tor), member 4		Mm.102244	expressed sequence R74975
Mm.16080	dynamin		Mm.101476	(Manual assignment) BNPI, VGLUT-1,
Mm.158871	RIKEN cDNA 2410003L22 gene			mouse homolog of putative vesicular
Mm.157929	ESTs, Weakly similar to PBAS MOUSE	15		glutamate transporter, Na+/Phosphate
	PROBASIN PRECURSOR			cotransporter
Mm.157859	ESTs		Mm.100980	calneuron 1
Mm.157648	RIKEN cDNA 5730403B10 gene		Mm.1008	prostaglandin D2 synthase (21 kDa,
Mm.15711	cyclic nucleotide phosphodiesterase 1			brain)
Mm.156959	beta-spectrin 4	20	Mm.1008	(Manual) Prostaglandin H2 D-Isomera-
Mm.15571	amyloid beta (A4) precursor protein			se (PGD2 SYNTHASE) (PGDS2)
Mm.15512	potassium voltage-gated channel, sha-			(PGDS) member of lipocalin family
	ker-related subfamily, beta member 2			(1 abs) member of apocalin family
Mm.154651	purine rich element binding protein B		Lists D. Besit	humanica a accepta Chamman III a 14 )
Mm.153758		25	Liste D: Posit	ivmarker neurale Stammzellen (1.);
	RIKEN cDNA 0610040H15 gene	25		
Mm.15125	stromal cell derived factor receptor 1		ES-Zellen +; F	PSA-NCAM - ; Adult brain -
Mm.14798	ribosomal protein S13			
Mm.142511	expressed sequence Al173355		[0042]	
Mm.142187	RIKEN cDNA 2610009E16 gene			
	•			
Mm.142140	neurofilament, medium polypeptide	<i>30</i>	Mm.9703	(Manual) copper transport protein/cha-
Mm.142140 Mm.140761	•	30	Mm.9703	(Manual) copper transport protein/cha- perone ATOX1
	neurofilament, medium polypeptide	30	Mm.9703 Mm.930	
	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C,	30		perone ATOX1
Mm.140761	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5	30	Mm.930	perone ATOX1 cathepsin L nerve growth factor receptor
Mm.140761 Mm.139797	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587	<i>30</i>	Mm.930	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1
Mm.139797 Mm.139239	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene		Mm.930 Mm.90787	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron
Mm.139797 Mm.139239 Mm.139239	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene		Mm.930 Mm.90787 Mm.90587 Mm.90115	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E		Mm.930 Mm.90787 Mm.90587	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote-
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866 Mm.13859	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41		Mm.930 Mm.90787 Mm.90587 Mm.90115 Mm.90003	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41 Rho GDP dissociation inhibitor (GDI)	35	Mm.930 Mm.90787 Mm.90587 Mm.90115	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3 EST, Weakly similar to S14234 hypo-
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866 Mm.13859 Mm.1383	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41 Rho GDP dissociation inhibitor (GDI) gamma		Mm.930 Mm.90787 Mm.90587 Mm.90115 Mm.90003	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3 EST, Weakly similar to S14234 hypo- thetical protein - mouse
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866 Mm.13859 Mm.1383	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41 Rho GDP dissociation inhibitor (GDI) gamma expressed sequence Al848120	35	Mm.930 Mm.90787 Mm.90587 Mm.90115 Mm.90003 Mm.88302	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3 EST, Weakly similar to S14234 hypo- thetical protein - mouse tubulin, alpha 6
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866 Mm.13859 Mm.1383	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41 Rho GDP dissociation inhibitor (GDI) gamma expressed sequence Al848120 3-oxoacid CoA transferase	35	Mm.930 Mm.90787 Mm.90587 Mm.90115 Mm.90003	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3 EST, Weakly similar to S14234 hypo- thetical protein - mouse tubulin, alpha 6 (Manual) fibronectin 1, internal tag (ma-
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866 Mm.13859 Mm.1383 Mm.135621 Mm.13445 Mm.1339	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41 Rho GDP dissociation inhibitor (GDI) gamma expressed sequence Al848120 3-oxoacid CoA transferase chromogranin B	35	Mm.930 Mm.90787 Mm.90587 Mm.90115 Mm.90003 Mm.88302 Mm.88212 Mm.87581	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3 EST, Weakly similar to S14234 hypo- thetical protein - mouse tubulin, alpha 6 (Manual) fibronectin 1, internal tag (ma- jor tag probably AAAAAAAAAAA)
Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866 Mm.13859 Mm.1383 Mm.135621 Mm.13445 Mm.1339 Mm.131127	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41 Rho GDP dissociation inhibitor (GDI) gamma expressed sequence Al848120 3-oxoacid CoA transferase chromogranin B RIKEN cDNA 6230410L23 gene	35 40	Mm.930 Mm.90787 Mm.90587 Mm.90115 Mm.90003 Mm.88302 Mm.88212 Mm.87581	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3 EST, Weakly similar to S14234 hypo- thetical protein - mouse tubulin, alpha 6 (Manual) fibronectin 1, internal tag (ma- jor tag probably AAAAAAAAAA) WD repeat domain 12
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Mm.139797 Mm.139239 Mm.139239 Mm.139239 Mm.138866 Mm.13859 Mm.1383 Mm.135621 Mm.13445 Mm.131127 Mm.12958 Mm.12958 Mm.1268 Mm.1268	neurofilament, medium polypeptide DnaJ (Hsp40) homolog, subfamily C, member 5 expressed sequence Al848587 RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene RIKEN cDNA 2900016C05 gene apolipoprotein E ribosomal protein L41 Rho GDP dissociation inhibitor (GDI) gamma expressed sequence Al848120 3-oxoacid CoA transferase chromogranin B RIKEN cDNA 6230410L23 gene kinesin light chain 2 G protein-coupled receptor 37-like 1 proteolipid protein (myelin) (Manual assignment) PLP Myelin Proteolipid Protein, uh05d10.r1 Soares mouse hypothalamus NMHy Mus musculus cDNA clone 1617043 5' similar to gb:M54927 MYELIN PROTEOLIPID PROTEIN glioblastoma amplified sequence	35 40 45	Mm.930 Mm.90787 Mm.90787 Mm.90587 Mm.90115 Mm.90003 Mm.88302 Mm.88212 Mm.87581 Mm.87293 Mm.87216 Mm.87293 Mm.87216 Mm.7417 Mm.7387 Mm.7387 Mm.7381 Mm.725	perone ATOX1 cathepsin L nerve growth factor receptor (TNFRSF16) associated protein 1 enolase 1, alpha non-neuron lysophospholipase 1 gap junction membrane channel prote- in beta 3 EST, Weakly similar to S14234 hypo- thetical protein - mouse tubulin, alpha 6 (Manual) fibronectin 1, internal tag (ma- jor tag probably AAAAAAAAAA) WD repeat domain 12 Rab geranylgeranyl transferase, a sub- unit TG interacting factor nucleolar and coiled-body phosphopro- tein 1 ESTs cyclin D3 RNA polymerase 1-4 (194 kDa subunit) hypoxia induced gene 1 ribosomal protein L7a

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Mm. 6500 Mm. 6570 Mm. 6587 Mm. 6587 Mm. 6587 Mm. 6584 Mm. 6584 Mm. 6584 Mm. 6587 Mm. 6588 Mm. 6587 Mm.	Mm.69049	cDNA sequence AF155546			IMAGE:3992883, mRNA, complete cds
Mm. 66.6 Mm. 6579 mm. 6584 mm. 6584 mm. 6584 mm. 6584 mm. 6584 mm. 6584 calpain, small subunit 1 calpain, small subunit 1 mucleophosmin	Mm.6700			Mm.3845	
Mm.6579 centromere autoantigen A calpain, small subunit 1 calpain, small state of activate Calpain, small state of Calpain, small state of Calpain, small small state of Calpain, small small state of Calpain, small sm		<del>-</del> •			
Mm. 6544 Mm. 6544 Mm. 6544 Mm. 6544 Mm. 6544 Mm. 6546 Mm. 6564 Mm. 657223 Mm. 65624 DEADH (Asp-Glu-Ala-AspHis) box polypeptide 16 Cytochrome c oxidase, subunit Vic (Manual) GNB2L1, RACK1, Receptor of activated C kinase, WD40-repeat protein Mm. 6569 Mm. 6569 Mm. 6560 Mm. 6560 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6562 Mm. 6562 Mm. 6562 Mm. 6562 Mm. 6563 Mm. 6564 Mm. 6564 Mm. 6565 Mm. 6564 Mm. 6565 Mm. 6564 Mm. 6566 Mm. 6565 Mm. 6564 Mm. 6566 Mm. 6566 Mm. 6567 Mm. 6567 Mm. 6568 Mm. 6568 Mm. 6568 Mm. 6569 Mm. 6569 Mm. 6569 Mm. 6569 Mm. 6569 Mm. 6560 Mm. 6560 Mm. 6560 Mm. 6560 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6560 Mm. 6561 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6562 Mm. 6562 Mm. 6562 Mm. 6563 Mm. 6564 Mm. 6566 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6562 Mm. 6562 Mm. 6562 Mm. 6563 Mm. 6564 Mm. 6560 Mm. 6563 Mm. 6564 Mm. 6560 Mm. 6560 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6560 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6562 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6562 Mm. 6561 Mm. 6561 Mm. 6562 Mm. 6561 Mm. 6562 Mm. 6561 Mm. 6563 Mm. 6564 Mm. 6562 Mm. 6564 Mm. 6565 Mm. 6564 Mm. 6566 Mm. 6564 Mm. 6566 Mm. 6564 Mm. 6566 Mm. 6565 Mm. 6564 Mm. 6566 Mm. 6561 Mm. 6566 Mm. 6561 Mm. 6566 Mm. 6566 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6561 Mm. 6562 Mm. 6562 Mm. 6562 Mm. 6561 Mm. 6562 Mm. 6565 Mm. 6564 Mm. 6565 Mm. 6564 Mm. 6565 Mm. 6564 Mm. 6565 Mm. 65		•		N 00454	•
Mm.5343 nucleophosmin 1 annexin A2 minostrasia A3 minostrasia A4 m		•	5		•
Mm.584 annexim A2 helicase, lymphoid specific		• •			
Mm. 57223         helicase, lymphoid specific         Mm. 3752         B-cell receptor oscidated protein 37 mm. 36241         B-cell receptor oscidated protein 37 cytochrome c oxidase, subunit Va mm. 3505         Mm. 36241 mm. 3572 mm. 3572 mm. 3500         Mm. 35821 mm. 3572 mm. 3572 mm. 3500         Mm. 35821 mm. 3572 mm. 3572 mm. 3500         Mm. 3583 mm. 3572 mm. 3500         Mm. 3580 mm. 3572 mm. 3580 mm. 3572 mm. 3500         Mm. 35972 mm. 3580 mm. 3572 mm. 3580 mm. 3580 mm. 3580 mm. 34828 mm. 34829 mm		•		141111.5776	•
Mm.57153         sterol O-acyltransferase 2         10         Mm.36241         B-cell receptor-associated protein 37 cytochrome c oxidase, subunit Va polypeptide 16 cytochrome c oxidase, subunit Va protein         Mm.360         Mm.360         Brell receptor-associated protein 37 cytochrome c oxidase, subunit Va Mm.360         Mm.350         Mm.360         RilKEN cDNA 1110033119 gene ESTs cadherin 1 cytochrome c oxidase, subunit Va Mm.3460         Mm.3460         Mm.3460         Mm.3460         Mm.3460         Mm.3460         Mm.3460         Mm.3460         Mm.3460         Mm.3461         Mm.3462         Mm.3462         Mm.3462         Mm.3462         Mm.3462         Mm.3462         Mm.3462         Mm.3464         Mm.3464         Mm.3464         Mm.3464         Mm.3464         Mm.3462         Mm.3462         Mm.3462         Mm.3466         Mm.3462	Mm.57223			Mm.3752	· · ·
Mm.5624         DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 16 cytochrome c oxidase, subunit Vic polypeptide 16 cytochrome c oxidase, subunit Vic (Manual) GNB2L1, RACK1, Receptor of activated C kinase, WD40-repeat protein         Mm.35601         Mm.35601         RIKER cDNA 1110033J19 gene         ESTS cacherin 1 ribosomal protein L30 ribosomal protein S40 Mm.3450	Mm.57153		10	Mm.36241	
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Mm.4280 RIKEN cDNA 2010203J19 gene  Mm.42790 ribosomal protein S18  Mm.42767 ribosomal protein S17  Mm.42197 proteasome (prosome, macropain) subunit, beta type 1  Mm.42196 nuclear protein 95  Mm.42195 RuvB-like protein 1  Mm.41161 RIKEN cDNA 1810055P05 gene  Mm.41061 RIKEN cDNA 1810055P05 gene  Mm.4026  Mm.4027  Mm.4028 Mm.4024  Mm.4028 Mm.4024  Mm.4028 Mm.4024  Mm.4028 Mm.4024  Mm.4028 Mm.4024  Mm.4029 Mm.4028 Mm.4024  Mm.4029 Mm.4026  Mm.4026 Mm.4026  Mm.4027  Mm.4027  Mm.4028 Mm.4028  Mm.4028 Mm.4024  Mm.4029 Mm.4028  Mm.4024 Mm.4026 CDC28 protein kinase 1  Mm.30184 RIKEN cDNA 2700086l23 gene  Mm.30184 RIKEN cDNA 2700086l23 gene  Mm.30060 RIKEN cDNA 2310008N12 gene  Complement component 1, q subcomponent binding protein  Mm.30049 complement component 1, q subcomponent binding protein  Mm.30034 translocase of inner mitochondrial membrane 8 homolog a (yeast)  Mm.29904 mitochondrial ribosomal protein L15  Mm.29902 Mus musculus, Similar to phosphoserine aminotransferase, clone MGC.6462  Mm.4026 Mm.4026 cofilin 1, non-muscle  Mm.4027  Mm.29859 ESTs, Moderately similar to S12207 hypothetical protein  Mm.3845 Mus musculus, eukaryotic translation  Mm.3845 Mm.4024 mm.29856 RIKEN cDNA 9130022B02 gene  Mm.29717 3-monooxgenase/tryptophan 5-monooxgenase activation protein, gamma		<del>-</del>			
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subunit, beta type 1  Mm.42196  Mm.42195  RuvB-like protein 1  Mm.41467  Mus musculus, clone MGC:28892 45  Mm.41151  ESTs  Mm.41061  Mm.		•	**	Mm 30184	
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IMAGE:4912251, mRNA, complete cds  Mm.41151 ESTs	Mm.42195	RuvB-like protein 1		Mm.30060	
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(OSCP) (ATP5O)  Mm.4095  inactive X specific transcripts  Mm.4024  cofilin 1, non-muscle  Mm.29859  Mm.29859  Mm.29859  Mm.29859  S100 calcium binding protein A4  Mm.38718  ESTs, Moderately similar to S12207 hypothetical protein  Mm.3845  Mm.3845  Mm.29856  Mm.29856	WITH.4 I		50		
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pothetical protein Mm.29717 3-monooxgenase/tryptophan 5-mo- Mm.3845 Mus musculus, eukaryotic translation nooxgenase activation protein, gamma	Mm.3925	•			· ·
Mm.3845 Mus musculus, eukaryotic translation nooxgenase activation protein, gamma	Mm.38718	•	55	Mm.29856	RIKEN cDNA 9130022B02 gene
· · · · · · · · · · · · · · · · · · ·		· ·		Mm.29717	• • •
termination factor 1, clone MGC: 18745 polypeptide	Mm.3845				
		termination factor 1, clone MGC: 18745			polypeptide

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Mm.29714	(Manual) mouse version of muscle-			tor), member 13
14	specific protein M9		Mm.24506	Mus musculus, clone IMAGE:3591061,
Mm.29675	thioredoxin-like 2			mRNA, partial cds
Mm.29619	RIKEN cDNA 1200007E24 gene	_	Mm.2437	BING4 protein
Mm.29513	NADH dehydrogenase (ubiquinone) 1	5	Mm.2424	ribosomal protein L10A
NA 00504	alpha subcomplex, 7 (14.5kD, B14.5a)		Mm.24220	RIKEN cDNA 2310003F16 gene
Mm.29504	sperm specific antigen 1		Mm.24219	RIKEN cDNA 1810037117 gene
Mm.2942	asparagine synthetase		Mm.24174	Mus musculus, similar to alanyl-tRNA
Mm.29405	ring-box 1	40		synthetase (H. sapiens), clone MGC:
Mm.29363	RIKEN cDNA 2310044F10 gene	10		37368 IMAGE:4976684, mRNA, com-
Mm.2930	Mus musculus, Similar to peter pan		M 0005	plete cds
	(Drosophila) homolog, clone MGC: 25669 IMAGE:4489442, mRNA, com-		Mm.2395	male enhanced antigen 1
			Mm.2355	prohibitin
Mm.29192	plete cds asparaginyl-tRNA synthetase	15	Mm.235 Mm.22731	ubiquitin B
Mm.29148	RIKEN cDNA 2400008B06 gene	,,,	Mm.22626	integrin beta 4 binding protein
Mm.29122	RIKEN cDNA 0610012D09 gene		WIII1.22020	Mus musculus, Similar to chromosome 14 open reading frame 3, clone MGC:
Mm.29076	RIKEN cDNA 2510010F10 gene			36589 IMAGE:5320590, mRNA, com-
Mm.28919	destrin			plete cds
Mm.28892	expressed sequence AA959742	20	Mm.2246	proteasome (prosome, macropain)
Mm.28805	SET translocation		141111.2240	subunit, beta type 7
Mm.2849	heat shock protein, 74 kDa, A		Mm.22421	telomerase binding protein, p23
Mm.28483	Mus musculus, Similar to hypothetical		Mm.22421	telomerase binding protein, p23
	protein FLJ22479, clone IMAGE:		Mm.22317	RIKEN cDNA 8430410A17 gene
	4487274, mRNA, partial cds	25	Mm.22288	cyclin D1
Mm.28405	serum/glucocorticoid regulated kinase		Mm.22271	smt3-specific isopeptidase 1
Mm.28173	ESTs, Moderately similar to JC5224		Mm.220992	Mus musculus, clone IMAGE:3492506,
	methioninetRNA ligase			mRNA, partial cds
Mm.28053	RIKEN cDNA 1110017C15 gene		Mm.219671	Mus musculus, clone MGC:36369
Mm.28035	ESTs, Weakly similar to	30		IMAGE:4982239, mRNA, complete cds
	TRHY_HUMAN TRICHOHYALI		Mm.219458	RNA binding protein gene with multiple
Mm.27901	RIKEN cDNA 1110020J08 gene			splicing
Mm.27858	RIKEN cDNA 1110036B12 gene		Mm.218533	RIKEN cDNA 1500016H10 gene
Mm.27855	replication factor C (activator 1) 2		Mm.2180	heat shock protein, 84 kDa 1
	(40kD)	35	Mm.21758	cytochrome P450, 2e1, ethanol induci-
Mm.2758	makorin, ring finger protein, 3			ble
Mm.27536	ESTs, Highly similar to hypothetical		Mm.21630	expressed sequence AU022237
	protein FLJ14075		Mm.21569	RIKEN cDNA 2700069E09 gene
Mm.27526	(Manual) Arginyl tRNA synthetase (RI-		Mm.213020	(Manual) 60S ribosomal protein L32
M 074.00	KEN cDNA 2610011N19)	40		(RPL32)
Mm.27186	Mus musculus, Similar to CG7083 ge-		Mm.212899	Mus musculus, Similar to RIKEN cDNA
	ne product, clone MGC:6480 IMAGE:			1200009K13 gene, clone MGC: 18794
Mm.2718	2646515, mRNA, complete cds		M 04000	IMAGE:4193513, mRNA, complete cds
WIIII.27 10	eukaryotic translation elongation factor 1 beta 2	45	Mm.21289	ribosomal protein S12
Mm.2718	eukaryotic translation elongation factor	43	Mm.21086	eukaryotic translation elongation factor
WIII.27 10	1 beta 2			1 delta (guanine nucleotide exchange
Mm,27134	RIKEN cDNA 2610033C09 gene		Mm.210638	protein) EST
Mm.265	ribosomal protein S25		Mm.21062	
Mm.2647	profilin 1	50	Mm.21054	expressed sequence C87860 nuclease sensitive element binding
Mm.2623	serine (or cysteine) proteinase inhibitor,		141111.21004	protein 1
	clade B (ovalbumin), member 6		Mm.20943	FK506 binding protein 9
Mm.25642	RIKEN cDNA 2310034K10 gene		Mm.20925	G1 to phase transition 1
Mm.254	tumor protein, translationally-controlled		Mm.20918	nuclear localization signal protein ab-
	1	55	<del>-</del>	sent in velo-cardio-facial patients
Mm.25328	ESTs		Mm.20848	regulatory factor X-associated ankyrin-
Mm.24513	solute carrier family 25 (mitochondrial			containing protein
	carrier; adenine nucleotide transloca-		Mm.20847	sorting nexin 5

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Mm.20294	selenophosphate synthetase 2		Mm.157778	RIKEN cDNA 2610034E13 gene
Mm.20290	expressed sequence AW536573		Mm.154915	ribosomal protein S29
Mm.20288	glutathione reductase 1		Mm.154387	transketolase
Mm.200920	ribosomal protein S28		Mm.153963	CD8 antigen, beta chain
Mm.197601	heat shock 10 kDa protein 1 (chapero-	5	Mm.153159	chaperonin subunit 6a (zeta)
	nin 10)	Ū	Mm.152291	EST
Mm.197555	hypothetical protein MGC6664		Mm.151329	karyopherin (importin) beta 3
Mm. 197551	heat shock 70kD protein 8		Mm.148973	RIKEN cDNA 3010025E17 gene
Mm.196604	angio-associated migratory protein, re-		Mm.147946	MYB binding protein (P160) 1a
	lated sequence	10		ribosomal protein S3
Mm.196586	cullin 2		Mm.14768	reduced expression 3
Mm. 196581	mitogen activated protein kinase 1		Mm.14663	ATP synthase, H+ transporting, mi-
Mm.196526	ADP-ribosylation factor 6			tochondrial F0 complex, subunit g
Mm.196396	tubulin, alpha 1		Mm.143141	eukaryotic translation initiation factor
Mm.196081	peptidylprolyl isomerase (cyclophilin)-	15		1A
	like 1		Mm.142740	metallothionein 2
Mm.196	neural precursor cell expressed, de-		Mm.14245	ribosomal protein, large P2
	velopmentally down-regulated gene 8		Mm.14244	ribosomal protein L9
Mm.195894	Mus musculus, clone MGC:11792		Mm.141443	lactate dehydrogenase 1, A chain
	IMAGE:3595167, mRNA, complete cds	20	Mm.141187	trans-golgi network protein 2
Mm.19169	thioredoxin-like (32kD)		Mm.140380	ribosomal protein L23
Mm.188	(Manual) X-linked phosphoglycerate ki-		Mm.139825	Mus musculus, Similar to xylosylprotein
	nase (PGK1)			betal,4-galactosyltransferase, poly-
Mm.18637	teratocarcinoma expressed, serine rich			peptide 7 (galactosyltransferase I), clo-
Mm. 18459	fibroblast growth factor inducible 14	25		ne MGC: 28643 IMAGE:4224150, mR-
Mm.183022	DNA segment, Chr 8, Brigham & Wo-			NA, complete cds
	men's Genetics 1112 expressed		Mm.13705	(Manual) mouse version of p180 ribo-
Mm.182951	proteasome (prosome, macropain)			some receptor/ribosome binding prote-
	subunit, alpha type 2			in 1 RRBP1
Mm.182931	phosphoribosylaminoimidazole car-	30	Mm.13020	ribacamal protain L40a
	• •	-	111111111111111111111111111111111111111	ribosomal protein L13a
	boxylase, phosphoribosylaminoribosy-	-	Mm.12909	amyloid beta (A4) precursor protein-
		-		•
	boxylase, phosphoribosylaminoribosy-			amyloid beta (A4) precursor protein-
Mm.182471	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide		Mm.12909	amyloid beta (A4) precursor protein- binding, family A, member 3
Mm.182471 Mm.181765	boxylase, phosphoribosylaminoribosy- laminoimidazole, succinocarboxamide synthetase	35	Mm.12909 Mm.1275	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1
	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched		Mm.12909 Mm.1275 Mm.12508	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2
	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/en-		Mm.12909 Mm.1275 Mm.12508 Mm.1164	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2,
	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP),		Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36
	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/en-		Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphos- phate kinase)
Mm.181765	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence		Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphos- phate kinase) endometrial bleeding associated factor
	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regu-	35	Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376 Mm.1125 Mm.1120 Mm.108076	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphos- phate kinase) endometrial bleeding associated factor phosphofructokinase, platelet
Mm.181765 Mm.181740	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2	35	Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376 Mm.1125 Mm.1120 Mm.108076 Mm.10706	amyloid beta (A4) precursor protein- binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphos- phate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene
Mm.181765	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State	35	Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376 Mm.1125 Mm.1120 Mm.108076	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S riboso-
Mm.181765  Mm.181740  Mm.180299	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed	35 40	Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376 Mm.1125 Mm.1120 Mm.108076 Mm.10706 Mm.10706	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4
Mm.181765  Mm.181740  Mm.180299  Mm.17932	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase	35	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa	35 40	Mm.12909 Mm.1275 Mm.12508 Mm.1164 Mm.11376 Mm.1125 Mm.1120 Mm.108076 Mm.10706 Mm.10706	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496,
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777  Mm.176845	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene	35 40	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702  Mm.10702	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Cal-	35 40	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702  Mm.10665  Mm.10623	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence Al480570
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777  Mm.176845	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702  Mm.10623  Mm.10600	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence AI480570 glutamate dehydrogenase
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777  Mm.176845	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEP-	35 40	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.108076  Mm.10706  Mm.10702  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence AI480570 glutamate dehydrogenase solute carrier family 1, member 7
Mm.181740 Mm.180299 Mm.17932 Mm.1777 Mm.176845 Mm.175848	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEPTIDE) (EMAP)	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.108076  Mm.10706  Mm.10702  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056  Mm.10474	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence AI480570 glutamate dehydrogenase solute carrier family 1, member 7 RIKEN cDNA 3110005M08 gene
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777  Mm.176845  Mm.175848	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEPTIDE) (EMAP) RIKEN cDNA 1110036C17 gene	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.108076  Mm.10706  Mm.10702  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056  Mm.10474  Mm.101619	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence AI480570 glutamate dehydrogenase solute carrier family 1, member 7 RIKEN cDNA 3110005M08 gene EST
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777  Mm.176845  Mm.175848	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEPTIDE) (EMAP) RIKEN cDNA 1110036C17 gene hydroxymethylbilane synthase	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056  Mm.10474  Mm.101619  Mm.10	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence AI480570 glutamate dehydrogenase solute carrier family 1, member 7 RIKEN cDNA 3110005M08 gene EST spermidine synthase
Mm.181765  Mm.181740  Mm.180299  Mm.17932  Mm.1777  Mm.176845  Mm.175848	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEPTIDE) (EMAP) RIKEN cDNA 1110036C17 gene hydroxymethylbilane synthase POU domain, class 5, transcription fac-	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.108076  Mm.10706  Mm.10702  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056  Mm.10474  Mm.101619	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence Al480570 glutamate dehydrogenase solute carrier family 1, member 7 RIKEN cDNA 3110005M08 gene EST spermidine synthase Kruppel-like factor 4 (gut) [Swissprot:
Mm.181740 Mm.180299 Mm.17932 Mm.1777 Mm.176845 Mm.175848 Mm.175661 Mm.1710 Mm.17031	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEPTIDE) (EMAP) RIKEN cDNA 1110036C17 gene hydroxymethylbilane synthase POU domain, class 5, transcription factor 1	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056  Mm.10474  Mm.101619  Mm.10  Mm.4325	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence Al480570 glutamate dehydrogenase solute carrier family 1, member 7 RIKEN cDNA 3110005M08 gene EST spermidine synthase Kruppel-like factor 4 (gut) [Swissprot: spIQ60793;spIQ9R255;]
Mm.181740 Mm.180299 Mm.17932 Mm.1777 Mm.176845 Mm.175848  Mm.175661 Mm.1710 Mm.17031 Mm.16757	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEPTIDE) (EMAP) RIKEN cDNA 1110036C17 gene hydroxymethylbilane synthase POU domain, class 5, transcription factor 1 solute carrier family 20, member 1	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056  Mm.10474  Mm.101619  Mm.10	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence AI480570 glutamate dehydrogenase solute carrier family 1, member 7 RIKEN cDNA 3110005M08 gene EST spermidine synthase Kruppel-like factor 4 (gut) [Swissprot: spIQ60793;spIQ9R255;] insulin-like growth factor 2, binding pro-
Mm.181740 Mm.180299 Mm.17932 Mm.1777 Mm.176845 Mm.175848 Mm.175661 Mm.1710 Mm.17031	boxylase, phosphoribosylaminoribosylaminoimidazole, succinocarboxamide synthetase RIKEN cDNA 2610524G07 gene Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730409M10:CCAAT/enhancer binding protein alpha (C/EBP), related sequence 1, full insert sequence interferon-related developmental regulator 2 DNA segment, Chr 16, Wayne State University 109, expressed purine-nucleoside phosphorylase heat shock protein, 60 kDa RIKEN cDNA 1110069M14 gene (Manual) small Ca-binding protein Calgizzarin (S100A11) (ENDOTHELIAL MONOCYTE-ACTIVATING POLYPEPTIDE) (EMAP) RIKEN cDNA 1110036C17 gene hydroxymethylbilane synthase POU domain, class 5, transcription factor 1	35 40 45	Mm.12909  Mm.1275  Mm.12508  Mm.1164  Mm.11376  Mm.1125  Mm.1120  Mm.108076  Mm.10706  Mm.10706  Mm.10702  Mm.10665  Mm.10623  Mm.10600  Mm.1056  Mm.10474  Mm.101619  Mm.10  Mm.4325	amyloid beta (A4) precursor protein-binding, family A, member 3 thioredoxin 1 karyopherin (importin) alpha 2 SEC61, gamma subunit (S. cerevisiae) ribosomal protein L36 expressed in non-metastatic cells 2, protein (NM23B) (nucleoside diphosphate kinase) endometrial bleeding associated factor phosphofructokinase, platelet RIKEN cDNA 2010004J23 gene (Manual) mouse version of 60S ribosomal protein L4 calcyclin binding protein Mus musculus, clone IMAGE:3498496, mRNA, partial cds expressed sequence Al480570 glutamate dehydrogenase solute carrier family 1, member 7 RIKEN cDNA 3110005M08 gene EST spermidine synthase Kruppel-like factor 4 (gut) [Swissprot: spIQ60793;spIQ9R255;]

EP ·	t	529	838	A <sub>1</sub>
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	25 EP 1	529	838 A1	26
Mm.34407	splQ8R5G0;splQ9CT94;] MAD homolog 7 (Drosophila) [Swiss-		Mm.7793	protein phosphatase 1, catalytic subunit, gamma isoform
Mm.4451	prot: splO35253;splQ9CSC7;] hairy and enhancer of split 1, (Droso-		Mm.7723 Mm.76278	poly(A) binding protein, nuclear 1 RIKEN cDNA 2610203K23 gene
Mm 57405	phila) [Swissprot: none]	5	Mm.7516	nuclear autoantigenic sperm protein (hi-
Mm.57195 Mm.1249	nodal [Swissprot: splP43021;] laminin, gamma 1 [Swissprot: spl P02468;]		Mm.7312	stone-binding) DNA segment, Chr 17, human D6S56E 2
Mm.27706	ash2 (absent, small, or homeotic)-like (Drosophila) [Swissprot:	10	Mm.7141 Mm.6787	proliferating cell nuclear antigen splicing factor, arginine/serine-rich 3
Mm.4603	scavenger receptor class B1 [Swiss-		M 00	(SRp20)
Mm.181562	prot: splQ61009;splQ9CWJ7;] adhesion regulating molecule 1 [Swissprot: splQ8VCl8;splQ922A7;		Mm.6476 Mm.64104	ribosomal protein S4, X-linked RIKEN cDNA 2700084L22 gene RIKEN cDNA 2410016F19 gene
Mm.43444	splQ9JKV1;] MAD2 (mitotic arrest deficient, homo-	15	Mm.6343 Mm.61901	nucleophosmin 1
WIIII.45444	log)-like 1 (yeast) [Swissprot:		Mm.6065	expressed sequence Al429604 inosine 5'-phosphate dehydrogenase 2
Mm.103675	sacsin [Swissprot: none]		Mm.5624	DEAD/H (Asp-Glu-Ala-Asp/His) box po-
Mm.980	tenascin C [Swissprot: splQ64706;			lypeptide 16
M 5000	splQ9WUU4;]	20	Mm.548	cytochrome c oxidase, subunit VIc
Mm.5090	cripto, teratocarcinoma-derived growth factor (Tdgf1)		Mm.5305	guanine nucleotide binding protein, beta 2, related sequence 1
Mm.30177	D11Ertd603e, DNA segment, Chr 11, ERATO Doi 603		Mm.525	eukaryotic translation initiation factor 4, gamma 2
Mm.233844	C330012H03Rik, RIKEN cDNA C330012H03	25	Mm.5114	dishevelled 2, dsh homolog (Drosophila)
<u>-</u>			Mm.4933	mini chromosome maintenance de-
Liste E: Posi	tivmarker neurale Stammzellen (2.);		Mm.4890	ficient 6 (S. cerevisiae)
ES-Zellen +;	PSA-NCAM -/+; Adult brain -	30	WIII.4690	Finkel-Biskis-Reilly murine sarcoma virus (FBR-MuSV) ubiquitously expressed (fox derived)
[0043]			Mm.4846	lamin B1
	•		Mm.4756	leptin receptor
Mm.99776	cytosolic aminopeptidase P		Mm.46754	expressed sequence Al316867
Mm.9916	RIKEN cDNA 1200008012 gene	35		RIKEN cDNA 1110007L15 gene
Mm.99	ribonucleotide reductase M2	-	Mm.4551	villin 2
Mm.9811 Mm.9257	RIKEN cDNA 2310008M10 gene (Manual) uncharacterized protein corre-		Mm.4550	ATPase, Na+/K+ transporting, beta 1
WIIII.9237	sponding to human splQ9Y3l0, similar		Mm.4541	polypeptide SRY-box containing gene 2
	to E.coli rtcB, UPF0027-family	40	Mm.45312	anaphase-promoting complex subunit 5
Mm.925	transcription factor Dp 1		Mm.45149	ESTs
Mm.918	heat shock 70kD protein 5 (glucose-re-		Mm.45132	expressed sequence AW121759
	gulated protein, 78kD)		Mm.4426	Cd63 antigen
Mm.911	high mobility group nucleosomal bin- ding domain 2	45	Mm.43444	MAD2 (mitotic arrest deficient, homolog)-like 1 (yeast)
Mm.9043	heterogeneous nuclear ribonucleopro-		Mm.4280	RIKEN cDNA 2010203J19 gene
Mm.89927	tein L signal recognition particle 9 kDa		Mm.42767 Mm.4237	ribosomal protein S17 topoisomerase (DNA) II alpha
Mm.89579	mannose-P-dolichol utilization defect 1		Mm.42197	proteasome (prosome, macropain) sub-
Mm.89136	H3 histone, family 3A	50	141111.42137	unit, beta type 1
Mm.88212	tubulin, alpha 6		Mm.4215	catalase 1
Mm.880	mammary tumor integration site 6		Mm.41940	RIKEN cDNA 6530409L22 gene
Mm.8552	baculoviral IAP repeat-containing 5		Mm.4189	cyclin A2
Mm.8256	KH domain containing, RNA binding, si-		Mm.41023	RIKEN cDNA 1110021E09 gene
	gnal transduction associated 1	55	Mm.4078	antigen identified by monoclonal antibo-
Mm.8155	TG interacting factor			dy Ki 67
Mm.78861	nucleolar and coiled-body phosphopro-		Mm.4071	laminin receptor 1 (67kD, ribosomal pro-
	tein 1			tein SA)

tein SA)

tein 1

27	ΕP	1	529	838	A1
		•	OLU	~~	~ .

N 4004	#III- A			Burger Barra Control
Mm.4024	cofilin 1, non-muscle		Mm.29122	RIKEN cDNA 0610012D09 gene
Mm.3931	Max protein		Mm.29055	chromobox homolog 1 (Drosophila HP1
Mm.38930	expressed sequence AA407558			beta)
Mm.38912	RIKEN cDNA 2410129H14 gene		Mm.29054	RIKEN cDNA 2610529I12 gene
Mm.38611	RIKEN cDNA 2210021A15 gene	5	Mm.29005	expressed sequence AU021749
Mm.38528	RIKEN cDNA 2810430M08 gene		Mm.28995	RIKEN cDNA 2010009J12 gene
Mm.38306	macrophage erythroblast attacher		Mm.28985	ribosomal protein L27
Mm.3797	nucleosome assembly protein 1-like 1		Mm.28965	RIKEN cDNA 0710007A14 gene
Mm.37835	ribosomal protein L7		Mm.28964	Mus musculus, clone IMAGE:4949762,
Mm.372	ribosomal protein S26	10		mRNA, partial cds
Mm.36511	mitochondrial ribosomal protein L32		Mm.28961	cleavage and polyadenylation specific
Mm.35844	growth arrest specific 5			factor 5, 25 kD subunit
Mm.35829	erythroid differentiation regulator		Mm.28909	protein tyrosine phosphatase 4a1
Mm.35661	Mus musculus, Similar to hypothetical		Mm.28899	RIKEN cDNA 1110059P08 gene
	protein, clone MGC:29235 IMAGE:	15	Mm.28805	SET translocation
	5043282, mRNA, complete cds		Mm.28805	SET translocation
Mm.35087	expressed sequence AA673488		Mm.28805	SET translocation
Mm.3501	kinesin family member C5A		Mm.28726	EST C77032
Mm.34914	ESTs		Mm.28694	RIKEN cDNA 2410088K19 gene
Mm.3487	ribosomal protein L30	20	Mm.28560	Ly1 antibody reactive clone
Mm.3444	bromodomain-containing 2		Mm.28499	•
Mm.34385	expressed sequence Al450344		WIII1.20499	Mus musculus, similar to CG15881 ge-
Mm.34261	expressed sequence AW557761			ne product (H. sapiens), clone MGC:
				36308 IMAGE:5040108, mRNA, com-
Mm.3381	ribosomal protein S8	05	14 00000	plete cds
Mm.3380	kinesin family member 5B	25	Mm.28299	ESTs, Highly similar to GUAA_HUMAN
Mm.3360	tyrosine 3-monooxygenase/tryptophan			GMP SYNTHASE
	5-monooxygenase activation protein,		Mm.28222	RIKEN cDNA 2610307C23 gene
	zeta polypeptide		Mm.28121	RIKEN cDNA 1110061A19 gene
Mm.326	RIKEN cDNA 1110038L14 gene		Mm.28044	filamin-like protein
Mm.320	DNA polymerase alpha 2, 68 kDa	30	Mm.27972	NS1-associated protein 1
Mm.3199	RIKEN cDNA 1500001N04 gene		Mm.27927	heterogeneous nuclear ribonucleopro-
Mm.31512	ring finger protein 2			tein A1
Mm.31228	RIKEN cDNA 1810022K09 gene		Mm.27852	expressed sequence AW555814
Mm.30806	ribosomal protein L19		Mm.27818	eukaryotic translation elongation factor
Mm.3054	alpha-L-iduronidase	35		2
Mm.3035	RIKEN cDNA 3110006P09 gene		Mm.27796	RIKEN cDNA 5730427N09 gene
Mm.30270	proteasome (prosome, macropain) sub-		Mm.27669	small nuclear ribonucleoprotein E
	unit, alpha type 4		Mm.27660	RIKEN cDNA 5730420G12 gene
Mm.30120	ribosomal protein S27-like		Mm.27624	RIKEN cDNA C530002L11 gene
Mm.30069	RIKEN cDNA 1200003J11 gene	40	Mm.27293	RIKEN cDNA 4833420K19 gene
Mm.30011	ribosomal protein S23		Mm.27269	RIKEN cDNA 2310037i24 gene
Mm.29931	cell division cycle 20 homolog (S. cere-		Mm.27141	Rac GTPase-activating protein 1
	visiae)		Mm.27074	RIKEN cDNA 2610019N13 gene
Mm.29923	SMT3 (supressor of mif two, 3) homolog		Mm.265	ribosomal protein S25
	2 (S. cerevisiae)	45	Mm.2591	RNA binding motif protein 3
Mm.29911	RIKEN cDNA 3200001M24 gene		Mm.25558	RIKEN cDNA 2410018J24 gene
Mm.29896	ribosomal protein L21		Mm.25542	(Manual) strange EST contig in intron of
Mm.2986	expressed sequence AW146116			p137 (GPI-anchored transcytosis prote-
Mm.29829	expressed sequence Al326010			in), maybe alternative C-terminus of
Mm.29666	solute carrier family 25 (mitochondrial	50		splQ60865
	carnitine/acylcarnitine translocase),		Mm.254	tumor protein, translationally-controlled
	member 20			1
Mm.2966	isocitrate dehydrogenase 2 (NADP+),		Mm.25299	ESTs, Weakly similar to simple repeat
	mitochondrial			sequence-containing transcript
Mm.29296	RIKEN cDNA 1110003H02 gene	55	Mm.25164	gene trap locus 1-13
Mm.29194	RIKEN cDNA 1700094M07 gene		Mm.25137	RIKEN cDNA 2410004B18 gene
Mm.29133	budding uninhibited by benzimidazoles		Mm.24870	(Manual assignment) UBP7 ubiquitin
	1 homolog, beta (S. cerevisiae)			hydrolase
				,

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2	О

M 04504	41454000			
Mm.24591	expressed sequence AW546279		Mm.21054	nuclease sensitive element binding pro-
Mm.2424 Mm.24219	ribosomal protein L10A		M 00007	tein 1
Mm.24219	RIKEN cDNA 1810037I17 gene		Mm.20927	transforming growth factor beta 1 indu-
Mm.23943	RIKEN cDNA 1210001E11 gene	5	Mm.206399	ced transcript 4
WIII1.23543	vesicle-associated membrane protein, associated protein A (33 kDa)	3	Mm.206399 Mm.2038	ESTs
Mm.23758	RIKEN cDNA 1110008P04 gene		WITT.2036	Ras-GTPase-activating protein SH3-
Mm.23695	dihydrofolate reductase		Mm.2025	domain binding protein survival motor neuron
Mm.23692	casein kinase II, alpha 1 related se-		Mm.200837	Mus musculus, clone IMAGE:5355658,
WIII.20002	quence 4	10	Wii11.200037	mRNA
Mm.23096	protein phosphatase 2 (formerly 2A), re-		Mm.196614	eukaryotic translation elongation factor
	gulatory subunit B", alpha		141111111111111111111111111111111111111	1 alpha 1
Mm.2287	proteasome (prosome, macropain) sub-		Mm.196608	expressed sequence AA407306
	unit, alpha type 5		Mm.196526	ADP-ribosylation factor 6
Mm.22731	integrin beta 4 binding protein	15	Mm.196515	DNA segment, Chr 1, ERATO Doi 692,
Mm.2265	U1 small nuclear ribonucleoprotein 1C			expressed
Mm.22387	expressed sequence Al314668		Mm.196396	tubulin, alpha 1
Mm.22269	exportin 1, CRM1 homolog (yeast)		Mm.196365	RIKEN cDNA 4833416109 gene
Mm.22214	RIKEN cDNA 2610008F03 gene		Mm.196328	RIKEN cDNA 5830466J11 gene
Mm.220918	heterogeneous nuclear ribonucleopro-	20	Mm.195898	phosphatidylethanolamine binding pro-
	tein D-like			tein
Mm.220342	Mus musculus, clone IMAGE:3669867,		Mm.1951	ribonucleic acid binding protein S1
	mRNA, partial cds		Mm.1948	t-complex testis expressed 1
Mm.219670	Mus musculus, Similar to eukaryotic		Mm.193688	RIKEN cDNA 2700059D21 gene
	translation initiation factor 4 gamma, 1,	25	Mm.19187	prothymosin alpha
	cione IMAGE:4950789, mRNA, partial		Mm.19101	DEAD (aspartate-glutamate-alanine-
	cds			aspartate) box polypeptide 5
Mm.219668	RIKEN cDNA 2610209F03 gene		Mm.19015	serine racemase
Mm.219648	Mus musculus, Similar to nuclear matrix		Mm.18923	mini chromosome maintenance de-
	protein p84, clone MGC:28284 IMAGE:	30		ficient 7 (S. cerevisiae)
NA: 04004	4010605, mRNA, complete cds		Mm.18921	valosin containing protein
Mm.21964	Mus musculus, clone IMAGE:3485208,		Mm. 18856	mitogen-activated protein kinase 6
M 01070	mRNA, partial cds		Mm.18705	vacuolar protein sorting 4b (yeast)
Mm.21873 Mm.218657	retroviral integration site 1 cerebellar ataxia 3	35	Mm.18700	RIKEN cDNA 1200009K13 gene
Mm.21841	splicing factor, arginine/serine-rich 2	33	Mm.18637	teratocarcinoma expressed, serine rich
WIII.21041	(SC-35)		Mm.18516 Mm.1843	H3 histone, family 3B heat shock protein, 86 kDa 1
Mm.218240	Mus musculus, clone IMAGE:5342828,		Mm.183102	actin-related protein 3 homolog (yeast)
111111210240	mRNA, partial cds		Mm.183016	thymine DNA glycosylase
Mm.2180	heat shock protein, 84 kDa 1	40	Mm.181880	RIKEN cDNA 1110007A14 gene
Mm.21764	small nuclear ribonucleoprotein poly-		Mm.181562	adhesion regulating molecule 1
	peptide G		Mm.1815	cytidine 5'-triphosphate synthase
Mm.21714	RIKEN cDNA 2410003A14 gene		Mm.180873	RIKEN cDNA 2510019J09 gene
Mm.21559	non-POU-domain-containing, octamer		Mm.180873	(Manual) probably reverse tag of 60S ri-
	binding protein	45		bosomal protein L18a
Mm.213452	Mus musculus, clone IMAGE:5320271,		Mm.180409	ubiquitin-conjugating enzyme E2H
	mRNA, partial cds		Mm.180271	RIKEN cDNA 5630400D24 gene
Mm.213020	(Manual) 60S ribosomal protein L32		Mm.17989	chaperonin subunit 8 (theta)
	(RPL32)		Mm.1777	heat shock protein, 60 kDa
Mm.21295	expressed sequence AW214031	50	Mm.1775	hematological and neurological expres-
Mm.21289	ribosomal protein S12			sed sequence 1
Mm.21281	ring finger protein 4		Mm.177451	RIKEN cDNA 5730544L10 gene
Mm.21185	adaptor-related protein complex AP-3,		Mm.17330	ESTs
NA 6445	beta 1 subunit		Mm.17306	tropomyosin 3, gamma
Mm.2115	heterogeneous nuclear ribonucleopro-	55	Mm.1703	tubulin, beta 5
Mm 01004	tein U		Mm.16976	TAF9 RNA polymerase II, TATA box bin-
Mm.21094	DNA segment, Chr 9, Wayne State University 138, expressed			ding protein (TBP)-associated factor, 32
	versity 100, expressed			kDa

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Mm.16775 ribosomal protein S24 Mm.16767 heterogeneous nuclear ribonucleoprotein A2/B1 Mm.16711 mini chromosome maintenance deficient 2 (S. cerevisiae) 5 Mm.16525 polo-like kinase homolog, (Drosophila) Mm.1639 myeloid cell leukemia sequence 1 Mm.16323 eukaryotic translation initiation factor 4A2 Mm.16323 eukaryotic translation initiation factor 10 Mm.156892 heterogeneous nuclear ribonucleoprotein D Mm.15571 amyloid beta (A4) precursor protein Mm.154915 15 ribosomal protein S29 Mm.153457 RIKEN cDNA 2810406C15 gene Mm.148973 RIKEN cDNA 3010025E17 gene Mm.142872 heterogeneous nuclear ribonucleoprotein K 20 Mm.14245 ribosomal protein, large P2 Mm.14244 ribosomal protein L9 Mm.142363 RIKEN cDNA 2810036L13 gene Mm.140804 Mus musculus, quanine nucleotide binding protein (G protein), gamma 5, clone MGC:8292 IMAGE:3593324, mRNA, complete cds Mm.140380 ribosomal protein L23 Mm.13886 suppressor of initiator codon mutations, related sequence 1 (S. cerevisiae) Mm.133825 30 RIKEN cDNA 0610010123 gene Mm.13356 RIKEN cDNA 3110079L04 gene Mm.131705 Mus musculus, Similar to single-stranded DNA binding protein, clone MGC: 41439 IMAGE: 1314987, mRNA, com-35 plete cds Mm.12858 eukaryotic translation initiation factor Mm.12706 Mus musculus, Similar to CG11246 gene product, clone MGC:8248 IMAGE: 3591968, mRNA, complete cds 40 Mm.12604 sirtuin 1 ((silent mating type information regulation 2, homolog) 1 (S. cerevisiae) Mm.12568 expressed sequence AW541137 Mm.12508 karyopherin (importin) alpha 2 Mm.12441 expressed sequence AU014645 45 Mm.124 thymopoietin Mm. 12236 zinc finger protein 207 Mm.12145 retinoblastoma binding protein 4 Mm.116989 actin-like Mm.111 50 poly(rC) binding protein 2 Mm. 10706 RIKEN cDNA 2010004J23 gene Mm.10474 RIKEN cDNA 3110005M08 gene Mm.10409 golgi autoantigen, golgin subfamily a, 4 Mm.103675 Mm.1013 ligase I, DNA, ATP-dependent 55 Mm.101274 RIKEN cDNA 2010008E23 gene Mm.10076 mitochondrial ribosomal protein L13

Nmycl, neuroblastoma myc-related on-

Mm.16469

cogene 1

#### Patentansprüche

 Zellpopulation, dadurch gekennzeichnet, dass mindestens 5% der Zellen neurale Vorläuferzeilen sind, die wenigstens einen der in Liste A oder Liste B aufgeführten Marker aufweisen.

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- Zellpopulation, dadurch gekennzeichnet, dass mindestens 5% der Zellen, neurale Vorläuferzellen sind, die wenigstens zwei, bevorzugt wenigstens 3 der in Liste A oder Liste B aufgeführten Marker aufweisen.
- Zellpopulation, nach mindestens einem der Ansprüche 1 bis 2, dadurch gekennzelchnet, dass die neuralen Vorläuferzellen keinen in Liste C aufgeführten Marker aufweisen.
- Zellpopulation nach mindestens einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, dass mindestens 25 % der Zellen neurale Vorläuferzellen sind.
- Zellpopulation nach mindestes einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, dass es sich um eine murine Zellpopulation handelt und/ oder die neuralen Vorläuferzellen aus Hirngewebe erhältlich ist.
- Verfahren zur Isolierung einer Zellpopulation nach mindestens einem der Ansprüche 1 bis 5 mit folgenden Schritten:
  - a) Entnahme einer Probe aus dem Hirn
  - b) Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker

oder

- a) Differenzierung von embryonalen Stammzellen zu neuralen Vorläuferzellen,
- b) isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker

oder

- a) Trans-Differenzierung von adulten, nicht neuralen Stammzellen zu neuralen Vorläuferzellen,
- b) Isolieren der neuralen Vorläuferzeilen unter Verwendung der angegebenen Marker

oder

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- a) Differenzierung von adulten, neuralen Stammzellen zu neuralen Vorläuferzellen,
- b) Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker

oder

- a) Differenzierung von immortalisierten Zellen zu neuralen Vorläuferzellen.
- b) Isolieren der neuralen Vorläuferzellen unter Verwendung der angegebenen Marker.
- Verwendung mindestens eines Markers ausgewählt aus der Liste A oder Liste B zu Identifizierung oder Isolierung von neuralen Vorläuferzellen.
- Antikörper gegen einen Marker aus der Liste A, B oder C.
- Diagnostikmittel enthaltend mindestens einen, bevorzugt zwei oder mehr Substanzen zur Erkennung der Marker der Liste A, B oder C.
- Arzneimittel enthaltend die Zellpopulation nach einem der Ansprüche 1 bis 5.
- Zellpopulation, dadurch gekennzeichnet, dass mindestens 5% der Zellen neurale Stammzellen sind, die wenigstens einen der in Liste D oder Liste E aufgeführten Marker aufweisen.
- 12. Zellpopulation, dadurch gekennzeichnet, dass mindestens 5% der Zellen neurale Stammzellen sind, die wenigstens zwei, bevorzugt wenigstens 3 der in Liste D oder Liste E aufgeführten Marker aufweisen.
- 13. Zellpopulation, nach mindestens einem der Ansprüche 11 bis 12, dadurch gekennzeichnet, dass die neuralen Stammzellen keinen in Liste A oder Liste C aufgeführten Marker aufweisen.
- Zellpopulation nach mindestens einem der Ansprüche 11-13, dadurch gekennzelchnet, dass mindestens 25% der Zellen neurale Stammzellen sind.
- 15. Zellpopulation nach mindestes einem der Ansprüche 11 bis 14, dadurch gekennzeichnet, dass es sich um eine murine Zellpopulation handelt und/oder die neuralen Stammzellen aus Hirngewebe erhältlich.
- 16. Verfahren zur Isolierung einer Zellpopulation nach mindestens einem der Ansprüche 11 bis 15 mit folgenden Schritten:
  - a) Entnahme einer Probe aus dem Hirn

b) Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker

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oder

- a) Differenzierung von embryonalen Stammzellen zu neuralen Stammzellen,
- b) Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker

oder

- a) Trans-Differenzierung von adulten, nicht neuralen Stammzellen zu neuralen Stammzellen
- b) Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker

oder

- a) De-Differenzierung von adulten, neuralen Vorläuferzellen zu neuralen Stammzellen.
- b) Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker

oder

- a) Differenzierung von immortalisierten Zellen zu neuralen Stammzellen,
- b) Isolieren der neuralen Stammzellen unter Verwendung der angegebenen Marker.
- Antikörper gegen einen Marker aus der Liste D, E, A oder C.
- 40 18. Diagnostikmittel enthaltend mindestens einen, bevorzugt zwei oder mehr Substanzen zur Erkennung der Marker der Liste D, E, A oder C.
  - Arzneimittel enthaltend die Zellpopulation nach einem der Ansprüche 11 bis 15.



# Europäisches EUROPÄISCHER TEILRECHERCHENBERICHT

Nummer der Anmeldung

der nach Regel 45 des Europäischen Patent-übereinkommens für das weitere Verfahren als europäischer Recherchenbericht gilt

EP 03 02 5506

	EINSCHLAGIG	E DOKUMENTE	,	
Kategorie	Kennzeichnung des Doku der maßgebliche	ments mit Angabe, soweit erforderlich en Teile	Betrifft Anspruch	KLASSIFIKATION DER ANMELDUNG (Int.Cl.7)
X	ARSENIJEVIC YVAN E multipotent neural the cortex of the EXPERIMENTAL NEURO Bd. 170, Nr. 1, Ju Seiten 48-62, XP00; ISSN: 0014-4886 * Seite 52, linke rechte Spalte, Abs	T AL: "Isolation of precursors residing in adult human brain" LOGY, li 2001 (2001-07), 2275728  Spalte, letzter Absatz - atz 1 * Spalte, letzter Absatz * Spalte, Absatz 2 -	1-6,10	RECHERCHIERTE SACHGEBIETE (Int.Cl.7) C12N G01N
Die Reche in einem s der Techni Vollständig Unvollstän Nicht reche	LLSTÄNDIGE RECHE rohenabtellung lat der Auffassung, di olohen Urrifang nicht entspricht bzw. Ik für diese Ansprüche nicht, bzw. nur grecherchierte Patentansprüche: dig recherchierte Patentansprüche: wrchierte Patentansprüche: sie Beschränkung der Recherche: e Ergänzungsblatt (	aß ein oder mehrere Ansprüche, den Vorschrifte entsprechen, daß simvolle Errzittlungen über d r teilweise, möglich sind.	in des EPÜ en Stand	
	Recharchenori	Abschlußdatum der Recherche		Proter
	MÜNCHEN	7. April 2004	Niel	ouhr-Ebel, K
X : von b Y : von b ander A : techn O : nicht	EGORIE DER GENANNTEN DOKL esonderer Bedeutung allein betrocht esonderer Bedeutung in Verbindung en Veröffentschung derselben Kateg obgischer Hintergrund schriftliche Offenbarung cherikentur	E: âlteres Patentdoku et nach dem Anmelde mit einer D: in der Anmeldung one L: aus anderen Gründ	ment, das jedool datum verölfenti angeführtes Doki len angeführtes (	icht worden ist ument Dokument



# EUROPÄISCHER TEILRECHERCHENBERICHT

Nummer der Anmeldung EP 03 02 5506

	EINSCHLÄGIGE DOKUMENTE	KLASSIFIKATION DER ANMELDUNG (Int.Cl.7)	
Kategorie	Kennzeichnung des Dokuments mit Angabe, soweit erforderlich der maßgeblichen Teile	Betrifft Anspruch	
X	UCHIDA N ET AL: "Direct isolation of human central nervous system stem cells" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, Bd. 97, Nr. 26, 19. Dezember 2000 (2000-12-19), Seiten 14720-14725, XP002223508 ISSN: 0027-8424 * Zusammenfassung * * Seite 14722, rechte Spalte, letzter Absatz - Seite 14724, rechte Spalte, Absatz 1 * * Abbildungen 1,2 *	11-16,19	RECHERCHIERTE
X	KANEKO Y ET AL: "MUSASHI1: AN EVOLUTIONALLY CONSERVED MARKER FOR CNS PROGENITOR CELLS INCLUDING NEURAL STEM CELLS" DEVELOPMENTAL NEUROSCIENCE, S. KARGER, BASEL, CH, Bd. 22, Nr. 1/2, 2000, Seiten 139-153, XP001033925 ISSN: 0378-5866 * Zusammenfassung * * Abbildung 5 *	11-16,19	SACHGEBIETE (Int.Cl.7)
	EP 1 354 943 A (NAT INST OF ADVANCED IND SCIEN) 22. Oktober 2003 (2003-10-22) "Monoclonal antibodies, hybridomas, cell isolation method, isolated cells and immunological diagnostic method" * Spalte 2, Zeile 42 - Spalte 3, Zeile 11 * * Spalte 13, Zeile 41 - Spalte 14, Zeile 53 *	1-19	

EPO FORM 1503 03.62 (PO4C12)



# EUROPÄISCHER TEILRECHERCHENBERICHT

Nummer der Anmeldung EP 03 02 5506

	EINSCHLÄGIGE DOKUMENTE KLASSIFIKATION DER ANMELDUNG (Int.CL.)			
Kategorie	Kennzeichnung des Dokuments mit Angabe, soweit erforderlich der maßgeblichen Teile	Betrifft Anspruch		
Х	GIMONA MARIO ET AL: "Beta-Actin Specific Monoclonal Antibody" CELL MOTILITY AND THE CYTOSKELETON, Bd. 27, Nr. 2, 1994, Seiten 108-116, XP009028901 ISSN: 0886-1544 * das ganze Dokument *	8,9,17,		
	·		RECHERCHIERTE SACHGEBIETE (Int.Cl.7)	



# UNVOLLSTÄNDIGE RECHERCHE ERGÄNZUNGSBLATT C

Nummer der Anmeldung EP 03 02 5506

Unvollständig recherchierte Ansprüche:
6. 16

Grund für die Beschränkung der Recherche (nicht patentfähige Erfindung(en)):

Artikel 52 (4) EPÜ - Verfahren zur chirurgischen Behandlung des menschlichen oder tierischen Körpers

Weitere Beschränkung der Recherche

Unvollständig recherchierte Ansprüche: 1-5, 7-15, 17-19

Grund für die Beschränkung der Recherche:

In den Listen A-E, auf die sich in den Patentansprüchen bezogen wird, sind insgesamt etwa 1000 putative Positiv- und Negativmarker neuraler Vorläuferzellen und neuraler Stammzellen aufgelistet. Diese putativen Marker sind teilweise bereits bekannte Proteine, wie z.B. beta-Aktin oder Interleukin 1 alpha, teilweise aber auch undefinierte, als "ESTs" benannte sogenannte Marker oder partielle mRNA-Sequenzen. Aufgrund der grossen Anzahl der putativen Marker und deren tw. mangelhaften Identifikation ist es unmöglich, eine vollständige Recherche zu erstellen.

# ANHANG ZUM EUROPÄISCHEN RECHERCHENBERICHT ÜBER DIE EUROPÄISCHE PATENTANMELDUNG NR.

EP 03 02 5506

In diesem Anhang sind die Mitglieder der Patentfamilien der im obengenannten europäischen Recherchenbericht angeführten Patentdokumente angegeben.
Die Angaben über die Familienmitglieder entsprechen dem Stand der Datei des Europäischen Patentamts am Diese Angaben dienen nur zur Unterrichtung und erfolgen ohne Gewähr.

07-04-2004

Im Recherchenbe angeführtes Patentdo		Datum der Veröffentlichung		Mitglied(er) Patentfami	der lie	Datum der Veröffentlichung
EP 1354943	A	22-10-2003	EP JP US	1354943 2004002350 2003186335	Α	22-10-2003 08-01-2004 02-10-2003

Für nähere Einzelheiten zu diesem Anhang : siehe Amtsblatt des Europäischen Patentamts, Nr.12/82